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A

WEEKLY REVIEW OF MEDICINE.

EDITED BY
FRANK P. FOSTER, M.D.

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Original Communications.

DRUGS IN THE TREATMENT OF SUMMER DIARRHŒA IN CHILDREN.[*]

By J. MILTON MABBOTT, M. D.

Drugs, Indications for:
a, Alkalies; b, Acids; c, Astringents; d, Opiates.

The literature appertaining to the medicinal treatment of summer diarrhœa in children is so abundant, and much of it so recent, that it would not have seemed expedient for me to venture to make a contribution to it were it not for your esteemed invitation to participate in this timely general discussion of a subject so important at this season of the year, and of which the indications for drugs must necessarily form a part.

I understand my part of the discussion to include the general subject of drugs as well as the indications for those specified in particular, and, first of all, therefore, I shall consider in a few words—though I shall not recommend—that large and recently so-much-vaunted class of remedies, the *antiseptics* or *antizymotics*, upon which much clinical and experimental effort has been expended, and from which so much has been hoped for in the treatment of a disease at least one form of which is admitted to be of zymotic origin. It was early inferred, however, that it would be difficult or impossible to find an antiseptic capable of internal administration in doses sufficient to kill or inhibit microbes without simultaneously proving poisonous to the patient. Baruch,[†] in a paper read before this Section of the Academy of Medicine, June 27, 1888, in referring to the internal administration of antiseptics, especially salicylate of sodium and naphthaline, then said: "But if we consider how large a quantity would be required to sterilize so extensive a surface, we can scarcely expect any decided results from this practice." Vaughan[‡] had previously read a paper in your presence, May 23, 1888, in which he showed the feeble inhibitory power upon the tyrotoxicon-producing germ of several of the more prominent antiseptic remedies, none of which was efficient in a proportion of less than 1 to 200, with the single exception of the bichloride of mercury, which possessed this power (*in milk*) in a proportion as small as 1 to 24,000, or about a third of a grain to the pint. Our experience in the treatment of diphtheria, as recommended by Jacobi,[#] warranted the hope that it might be possible to give this remedy for diarrhœa in doses large enough to be efficient, but on extended trial it has proved eminently unsatisfactory. By reason of absorption, Holt[‖] is probably correct in his conclusions, wherein he says that "soluble antiseptics are not likely to do more than affect the stomach and upper portion of the small intestine, and only insoluble drugs can be depended upon to reach the large intestine in any considerable quantity." We also know that insoluble drugs in a liquid menstruum, as they exist in the intestine in diarrhœa, are incapable of exerting much, if any, antiseptic action, and I believe the action of bismuth, classed by Holt as an antiseptic, though he admits its other properties, to be entirely due to the other properties, principally astringent and soothing. (I class bismuth, therefore, not with antiseptics, but with the astringents, though, perhaps, it should stand alone as a remedy whose *modus operandi* is very imperfectly understood.) Hence it seems at present impossible to administer antizymotics by the mouth in such a way as to influence materially the small and large intestines—the principal seat of the disease. Perhaps further research will succeed in solving the problem and furnishing us with an efficient intestinal antiseptic treatment for diarrhœa, but, in speaking of salol, naphthaline, and corrosive sublimate, J. Lewis Smith,[*] in the last edition of his book, goes so far as to say that "they have seemed to him to do more harm than good." Holt's[†] latest declaration is to the effect that "some of the disinfectant drugs are still used, but their administration with the idea of disinfecting the alimentary canal has been abandoned, to the decided advantage of the patient." I think we are therefore obliged to admit that they have been fairly tried and found wanting.

But the bacteriological studies relating to this disease, to which Booker[‡] in particular in this country has made such valuable contributions, have proved far from being unfruitful of good, for they have demonstrated the wisdom of attempting (by methods described to-night by other contributors to this discussion) to secure *asepsis* where we can not apply *antisepsis*. They have also more fully explained the *rationale* of the exhibition of a cathartic as an introductory to other treatment, not simply "when seen early" (Eustace Smith[#]), but *at any stage of the disease*, with a view to the fulfillment of that cardinal indication in rational medicine, the removal of the cause of the disease or its continuance.

For this purpose castor oil and calomel are the general favorites. Aromatic syrup of rhubarb is still in use (Louis Starr[‖]). An evacuant should always constitute our initial treatment, and after a few days, in cases in which the symptoms continue unrelieved by the subsequent treatment, the cathartic may be repeated. Antipyretic drugs have been largely superseded by other means of reducing temperature.

Stimulants, though locally undesirable, are necessary, and therefore allowable at any time if there is much prostration; and sedatives, like bromides and chloral or small doses of opiates, may be required to relieve suffering.

We used to be taught that bile was the natural intestinal antiseptic[△] and that mercury acted on the liver.[◊]

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[*] Read by invitation before the Section in Pædiatrics of the New York Academy of Medicine, May 12, 1892.

[†] *Medical News*, July 7, 1888.

[‡] *Ibid.*, June 9, 1888.

[#] *N. Y. Medical Journal*, June 30, 1888.

[‖] Keating's *Cyclopædia*, 1890.

[*] *Diseases of Children*, 1890.

[†] *Annual of the Universal Medical Sciences*, 1891.

[‡] *Tr. of the Internat. M. Cong.*, ix, Wash., 1887, iii, 598, 617.

[#] *Dis. of Children*, last edit., 1889.

[‖] *Dis. of the Digestive Organs*, new edit., January, 1891.

[△] See Tucker's *Notes on Delafield's Lectures*, 1887–'88, for comparatively recent corroboration.

[◊] Bartholow's *Materia Medica*, 1882.

Such theories, if tenable, could be conveniently utilized to explain in part the conceded efficacy of calomel and gray powder in very small doses (one tenth of a grain of calomel every two hours for several days), an efficacy entirely independent of their action as a cathartic, and now ascribed to *alterative* properties very vaguely understood.

Alkalies.—Until recently there seems to have been general consent to the administration of alkalies to neutralize acidity, usually believed to be present and indicated by green acid stools and sour vomiting. Angel Money,[*] writing five years ago, "always employed bismuth and an alkali with opium." The antacids commonly prescribed are lime-water, sodium bicarbonate, and various preparations of chalk, especially the official *mistura cretæ*. Magnesia is also employed, but its cathartic action, which may or may not be desired, should be borne in mind.

Now that we endeavor to promote asepsis and control fermentation by evacuant, dietary, hygienic, and other measures, alkalies are certainly of less importance than formerly. In the feeding of infants lime-water should still be added to cow's milk. It practically only restores the normal alkalinity, promoting looser coagulation, and has not seemed to me to interfere with the beneficial action of pepsin administered immediately afterward, often desirable as an aid to digestion in subacute and chronic cases when peptonized foods are not employed. Some prefer extractum pancreatis (Dawbarn[†]) to pepsin, because of its activity in an alkaline pabulum. Alkalies are usually given with or soon after feeding. When using pepsin, J. Lewis Smith gives alkalies midway between nursings or feedings.[‡]

Acids.—The indications for *acids* in acute cases are, to my mind, very doubtful. Lactic acid was brought forward by Hayem[#] about five years ago, afterward indorsed by Sevestre, Lesage, and others, and is advocated (1) in acute infectious diarrhœa, where the stools are numerous, watery, and often foul, but yellow in color; and (2) in green bacilliary diarrhœa, for which it is recommended as a specific. (In green bilious diarrhœa Sevestre is said to have found lactic acid useless, and only large doses of bicarbonate of sodium effective.)

Lesage, in fourteen autopsies, found the reaction of the intestinal tract, shortly after death from diarrhœal diseases, less acid than it is known to be after death from other causes. The small intestine was neutral, whereas Holt[‖] cites Escherich as authority, and states that "it is a well-known fact, confirmed by several observers, that the small intestine in healthy infants upon an exclusive milk diet is acid throughout." He also cites Pfeiffer's experiments, which appear to prove that the green stools which form so characteristic a feature of a large number of these cases are associated with *alkalinity* of some part of the intestinal tract, instead of hyperacidity, as previously supposed. These statements suggest a rational basis for the lactic-acid treatment. Lactic acid has also been claimed to check bacterial growth. The remedy is best given in half-drachm to one-drachm doses of a two-per-cent. aqueous solution, not less than twenty minutes after feeding, and at intervals of half an hour to two hours. My own experience with it in the Nursery and Child's Hospital was not at all satisfactory. J. Lewis Smith[*] refers to lactic acid, when present, as a product of faulty digestion, as being an active irritant which should be neutralized, and makes no reference to its employment as a remedy.

Other acids—aromatic sulphuric, dilute hydrochloric, and dilute nitric—have long been considered of value in subacute and chronic cases. Dawbarn[†] refers to them as *astringent tonics*. Moncorvo[‡] found a notable diminution in the amount of hydrochloric acid in the stomach in cases of diarrhœa, and dilute mineral acids, in doses of one to five drops considerably diluted, may supply this deficiency. They should be administered from twenty minutes to half an hour after feeding. Smith often combines them with pepsin.[#]

Astringents.—The vegetable astrigents—kino, krameria, catechu, hæmatoxylon, etc.—are much less esteemed than formerly. Meigs and Pepper,[‖] seven years ago, recommended them highly and voiced the general opinion. But many physicians have now practically discarded them, and agree with Dr. Baruch, who says:[△] "I have now little confidence in the various astringents which I formerly used extensively. As they were usually combined with opiates, it was impossible to judge of their intrinsic value." This statement was made four years ago. It is fair to add, however, that Eustace Smith,[◊] in his revised edition, over a year later, still recommends an astringent mixture with considerable confidence after commencing treatment with a gentle laxative.

The mineral astringents, with one exception, may be said to have been consigned to "innocuous desuetude." The one exception is bismuth, and the preparation usually prescribed is the subnitrate. Bismuth is the one drug which seems to be universally esteemed. It is prescribed in much larger doses than formerly—ten to twenty grains of the subnitrate every two hours for an infant being considered much more efficacious than smaller doses. My favorite method of administering it has been in combination with pepsin, as recommended by Dr. Smith in a paper read before the American Pædiatric Society in Philadelphia some three years ago.[‡]

Opiates are less used that formerly. Nothnagel[↕] has shown that the principal action of opium on the intestine is as a stimulant to the inhibitory nerves, thus checking peristalsis. As peristalsis is increased in diarrhœa, this action is desirable after the bowels have been emptied of their objectionable contents, but it is highly dangerous before such evacuation has been accomplished. The other indications for opium are to relieve restlessness, pain, and tenesmus, and control frequent watery stools. Dr. Partridge permits me to state that "he still has a strong belief in the efficacy of very small doses of opium in fulfilling the last indication, by producing the physiological effect of the drug, which is to diminish all secretions excepting that of the skin." Ashby and Wright[*] recommend opium in the latter stages if the stools continue small and numerous, and say it is best given by enema or subcutaneously. Holt and Crandall[†] advise always prescribing the opiate separately, so that it may be conveniently increased, diminished, or withheld at will. Increasing fever and cerebral or narcotic symptoms would call for its discontinuance. It should not be given when the passages are small, infrequent, and of bad odor. A diminution in the number of stools, while they become more offensive, would contra-indicate its use and demand a resort to evacuant measures. Paregoric, deodorized tincture of opium, and the tincture of ipecac and opium (the last in one-half to one-drop doses) are favorite preparations. Opiates should be used with caution, but they should be employed in nearly every case. "Pain is perfect misery, the worst of evils, and, excessive, overturns all patience."[‡] We should not forget that infants too young to complain are not too young to suffer, and that "the amelioration of suffering is one of the highest duties of the physician"[#] and of humanity.

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[*] *Treatment of Disease in Children*, 1887.

[†] Wood's *Reference Hand-book of the Med. Sci.*, 1886.

[‡] *Dis. of Children*, last edit., 1890.

[#] *Vide N. Y. Med. Jour.*, June 25, 1887, p. 716.

[‖] Keating's *Cyclopædia*, 1890.

[*] *Diseases of Children*, new edition, 1890.

[†] Wood's *Reference Hand-book of the Med. Sci.*, 1886.

[‡] *Vide Annual of the Univ. Med. Sci.*, 1889.

[#] *Diseases of Children*, September, 1890.

[‖] *Diseases of Children*, 1885.

[△] *Med. News*, July 7, 1888.

[◊] *Diseases of Children*, edit. October, 1889.

[‡] *Archives of Pædiatrics*, December, 1889.

[↕] *Vide* Holt. Keating's *Cyclopædia*, 1890.

19 FIFTH AVENUE.

A CONTRIBUTION TO THE

PHYSIOLOGY OF SEXUAL IMPOTENCE.[‖]

BY E. R. PALMER, M. D.,

PROFESSOR OF PHYSIOLOGY AND PATHOLOGICAL HISTOLOGY IN THE UNIVERSITY OF LOUISVILLE.

I ASK your attention to a subject full of interest and hard to handle, yet of paramount importance to every one. It lies in the borderland between the purely scientific on the one hand and the possibly prurient on the other. For want of a better title I have chosen as a somewhat paradoxical yet suggestive heading The Physiology of Impotence. If in what I may say I can formulate anything that shall make plainer than they are to-day the unwritten laws of healthy sexual living, I shall rest content. If I am not always rock-ribbed by the confines of cold science, I trust that the delicate nature of my theme will plead my excuse. By healthy sexual living I mean the legitimate pleasurable performance of the sexual act at proper intervals through life by both sexes without impairment of health and over a maximum period of time as time is measured by human life.

We are met at the very outset by the problem of evolution, and modifications under domestication confront the subject at every turn. Man, representing as he does the highest type of perversion by domestication, is to be studied as performing the sexual act in season and out of season, before puberty and in senility, irrespective of all laws either of Nature or of nation, at the risk of every loss, even that of honor, and least of all for the purpose of procreation. Beyond even the danger of a passing challenge it may be said of humanity that for more than any other finite possibility it lives for sexual living, and so may he rank as most a benefactor who shall, respecting this phase of life, outline the measures most conducive to the attainment of the greatest pleasure for the greatest number.

I would divide the subject into two sections: First, physiological impotence of the male without any regard to sterility; and, second, physiological impotence of the female with a like disregard of her procreative powers, avoiding as far as possible all of the many pathological influences and effects that are recognized by the profession as factors in this connection.

Of the male human being it may be said that he begins sexual life as a masturbator. The various reasons that have been assigned as explanatory of this habit are possibly all more or less correct. Just here I shall attempt neither to explain nor to controvert them, but simply, accepting the fact, to deal with its bearing on the future sexual life of the individual. Given a youth of approaching maturity; he has learned the evils of his way; he wants to be a man; he has quit, or at least has fully determined to do so, and he comes to the doctor for help. To his mind his case is indeed grave. He suffers with nocturnal pollutions, and, having read what he could find on the subject, he realizes what he deems the fearful error of his past life. He has attempted to perform the sexual act *à la mode*, but has failed most miserably, and so, with nothing left in life worth living for without sexual manhood, he tearfully begs for relief, hoping against hope that the great science to which he has appealed may possibly redeem him from that impotence that to his disturbed mind seems but to assure a future worse even than death.

It is not alone from the pamphlet of the catchpenny quack, but from the teachings of the regular profession as well, that he gets at least a part of the groundwork of his despair. To say to such a youth that in absolute continence, sedatives, circumcision, and the cold sound lie his only hope is, to my mind, whatever it may be from a moral standpoint, advice at variance with Nature and so in conflict with science; and, in face of the exceptional cases of physical wreck that self-abuse has wrought, I would maintain that its influence, recognizing its almost universality of performance in boyhood, has been not only wrongly estimated, but most unwisely exaggerated. In explanation of this statement I would say: Given any healthy-born youth of twenty who began masturbation at, say, twelve and followed the habit with considerable frequency and regularity during the eight subsequent years, at the same time indulging in ball-playing, swimming, and studying, eating, sleeping, and living like his fellows—such a youth, were it possible to blot from his memory the recollection of his past self-abuse with his relinquishment of the habit, would, as a rule, retain but one of the evils it may entail, and that one I do not find emphasized in print either by moralists or by scientists—namely, to transmit the inclination to the habit to his offspring.

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[*] *Diseases of Children*, 1889.

[†] *Annual of the Univ. Med. Sci.*, 1891.

[‡] *Paradise Lost.*

[#] Bridge. Wood's *Reference Hand-book of the Medical Sciences*, 1886.

[‖] Read before the American Society of Genito-urinary Surgeons.

We do not have to study Zola's history of the Rougon family or the annals of crime generally to be reminded of the transmissibility of the passions and their perversions in the germ-plasm from parent to offspring. It is thus largely that all vices are perpetuated. That such a youth as I have just described would suffer with pollutions, nocturnal, possibly diurnal, is quite probable, but I can not agree either that this disgusting tendency is solely the fruit of masturbation or that the inability of a youth to properly perform the sexual act is necessarily due to his having been a masturbator in earlier years. If a man from childhood to the marriage hour lives a morally spotless life, it does not follow either that he will not have had involuntary emissions, or that he will be able to copulate successfully at the first or, for that matter, the tenth attempt on the marital couch. Cases demonstrative in both instances can be cited to prove the fallacy of such doctrines.

We can not fail to recognize the habit of self-abuse as environed by numerous possible evils, but let us at least avoid the rule of portraying it as universally horrible and hurtful. Rather let us encourage and sustain the penitent with assurances of a manly future of physical well-being. What are the environing evils of masturbation? I suppose, among different replies to the query, all would practically agree that the chief was excessive indulgence, exercising that same evil upon the young that tobacco, alcohol, all-night card-playing, excessive copulation, where possible, and the like exercise; the manifest evil that any often repeated and severe tax must exert on the plastic tissues of early life; and, accepting this view of the question, I am willing to place self-abuse first, with alcohol and tobacco running neck-and-neck at its saddle-girth for second place in the race of ruin. Yet even here must I take issue with the popular dictum. It is thus often said by those who agree that mere masturbation *per se* is not so hurtful, that it is the opportunity for excesses in that direction and the widespread abuse of such opportunity that make masturbation a common curse. In contradiction of this popular idea, I make free to state that, as a clinical fact, in only quite a small minority of instances is such excessive indulgence the rule. The boy is father to the man; his instincts with each added year point more and more that way. The very secrecy that the habit entails is his safeguard. That same spirit that leads him, almost before his feet touch the floor beneath the mahogany, to sip his post-prandial *pousse-café* with all the nonchalance of an old clubman or to puff his vile cigarette on the avenue, is a part of the same intuition that makes him despise the unmanly vice of masturbation, and as he emerges from childhood each indulgence comes only after a mental battle against its performance—a battle in which manliness loses in the indulgence and yet wins in the new resolve that is born of the malaise and disgust that follow, delaying its repetition to within almost physiological bounds and soon enabling him to throw off the habit altogether or, in manly resolve, seek the aid of our profession.

What, then, is this impotence of youth for which we are so often consulted? Wherein lies the fault? Wherein is to be found the remedy? The fault rests largely in the common misconception with which the emission of semen is viewed by nearly every one, the medical profession included. The youth is taught that semen is a marvelous product, a thousandfold more precious than even blood itself; that a definite, an inflexible limit is placed by Nature on man's capacity to produce it; that he is charged, so to speak, at birth with a limited amount of the precious fluid; and so, therefore, by the most natural logic of the case, he is led to believe that in the prodigality of his early solitary indulgences he has largely, if not wholly, expended his stock of this priceless fluid, until matrimony, with happy home and healthy family, is barred to him forever; so that, like the despairing soul at the gateway of Perdition, he lifts his eyes but to read above the doorway of his future: "All hope they leave behind who enter here." That such should not only be a popular doctrine, but should secure at any rate the tacit indorsement of our profession, is, to my mind, not only an egregious error, but a blunder unwarranted either by analogy or by fact.

We see its teachings shown, not alone in the melancholy youth, but in the adult of middle life also, who not only exercises his will power to economize his stock, but bemoans the involuntary nocturnal pollution that results, as another precious charge futilely expended from his rapidly ebbing magazine of pleasure. It is like the dread of the Bogie man that, taught to the child in the nursery, leads him to fear the dark in later years, a false tradition that the sooner we get rid of the better. What an anomaly it would be in the eternal fitness of things if there should be a special law in Nature thus confining that phase of life by which life itself is perpetuated! A curse, rather, and its conception in human philosophy is as irrational as it is untrue. What evidence have we, either by analogy or by clinical facts, that in the regular use of the testicles they, like glands and organs generally, are not developed and strengthened rather than weakened and exhausted? May we not say, rather, that within reasonable bounds a natural, regular, and frequent use of the sexual organs tends to an increase of their power, and, accepting the fact of occasional instances of overtax, at the same time should we not equally recognize the hurtful influences of irregular use and continence in many cases of failure sexually, rather than attribute all such failures to a worn-out condition of the sexual apparatus? Want of use or unphysiological irregularity in that direction explains, to my mind, in a large degree that impotence of youth that other men, from a different standpoint, are prone to moralize about. The impotence of youth is the impotence of inexperience, rather than incapacity. He tries and fails, not because of any previous exhaustion of his powers, but rather because of their imperfect development and training. As the single julep or the first cigar turns his stomach or splits his head throughout the restless night, so the early copulation, imperfectly performed, surrounded as it is by such strangely unnerving phases, drags at his loins and runs riot with his heart for more than one day after the indulgence.

To such an abashed youth, depressed by his involuntary pollutions, overpowered by the Bogie-man idea, and because of his failure, in despair of his manhood, I would speak somewhat after this fashion: My dear boy, you have not lost your manhood; you rather have not found it. Your failure is the natural failure of the novice. One must learn to properly use, and in so using to develop, his physical powers sexually just as his other powers have been exercised and developed. You were a toddling infant once; now you possess the graces of Delsarte. Be patient, and above all be not afraid, and in due time all will be well with you. Marry if you so desire; better to marry than to burn, but, above all things, whether you marry or remain single, don't be cast down; cowardice begotten of sexual ignorance and fostered by false tradition is what impotence often means to the otherwise healthy youth.

Turning from the physiological impotence of the male youth, we are confronted with the question of sexual failure in the otherwise healthy man in the prime of middle life—the man who between forty and fifty seeks our advice for relief of failing or lost virility. Here, again, is to be met and combated the common explanation: "You are reaping the fruits of the self-abuse of your youth or the excesses of your early life. You have, by one or both of these means, worn out your precious powers, and there is no hope for you." Yet, in face of such doctrine, no commoner instances of early loss of virility can anywhere be found than in the ranks of those very men who not only were not addicted to excessive self-abuse in boyhood, and who have not been libertines in later years, but who instead justly enjoy in the community in which they live the reputation of being moral, orderly family men, noted for their always strict observance of all those laws that the most moral living enjoins. In such cases, and also, indeed, in those of a parallel age, where the accusation of early excesses is perhaps more tenable, omitting the influences of disease and perversion, what other causes of impotence than exhaustion may we recognize? There are several: First, there is the not inconsiderable group represented by the man, not passionate by nature, who, possessing the extremest conception of morality, has never exercised his sexual powers when he could help it, and then only in a perfunctory way. His feeble physical development sexually is father to his premature decay. Another class contains those who, recognizing the partial waning of their powers, begin assiduously to practice economy in that direction, hoping to conserve where in reality they by continence destroy.

The athlete would hardly shut himself in his room to save his muscles for the coming contest by so doing, yet that is practically what the economical middle-aged man is constantly doing sexually. The scholar does not sit down and gaze blankly into space to save the brain power he developed at college, and yet men are doing the like constantly in their sexual living. The athlete may overtrain, the student break down from too close application to study, and yet the law maintains that by use, not by disuse, by regular systematic exercise, are all of the organs of our bodies developed and kept at the fullness of their powers.

Still another and probably the largest class of healthy middle-aged impotents is represented by the man who is absorbed in business cares and worries. He feels that he is no longer a boy; life has become to him a solemn reality, and so, whether weary from coupon-clipping or worn out from futile efforts at kiting accommodation paper, he feels anything but kittenish when bed-time comes. It is then my belief that, within confines broader than those encompassing the rules of orthodox practices, man may and does by use develop, strengthen, and preserve the integrity of his sexual organs, and that the integrity, requirements, and possibilities of the germ-plasm apparatus are regulated by the same physiological laws that govern the somatoplasm organs of the rest of the individual.

Recognizing the high order of office allotted to the seminiferous organs and the consequent complex nervous relationship that they possess, I yet maintain that continence means atrophy, that disuse means decay; and not only this, but that the influence of persistent continence upon the individual, whether male or female, is to dwarf and in many respects destroy the breadth and fullness of physical and intellectual individuality. Some one has said that normal decay of virility is reached in the male human being at sixty-five. Individual instances of virility at fourscore years or more abound; comparatively few men, however, preserve such power beyond two and a half or three score years. Of those who do I may mention as illustrating what I have said a class known to all of us as the "men about town." They are to be met with at the club, on the betting stand at the race-course, or on the avenue of a pleasant afternoon, well trimmed, well dressed, carrying none of life's burdens they can possibly shift to other shoulders, living for themselves alone, and bent daily and nightly on getting all out of life they can—short-winded somewhat from their terrapin padding, with Burgundy twinges in their fingers and toes, yet for all this keeping up a fairly clever pace with the younger set, relying on the Turkish bath in winter and a sea voyage or mountain trip in summer to keep them on the turf for a few years longer. Come what may, they have learned the art, and so still enjoy the fruition of ideal sexual living.

The male pervert has no place in the physiology of sexual living. To chronicle his vagaries as others have done would be but to pander to pruriency and so to further foster unnatural vices. To make my object plain, which is a plea for healthier sexual living, the study of the maid, wife, and mother, from the standpoint of physiological impotence, is essential. The ideal young woman is almost necessarily impotent. From time immemorial the prerequisites in her moral and social qualifications have been modesty and chastity. Those lapses from absolutely virtuous living that in the male are condoned as charming little irregularities, when indulged in on her part, invariably call down upon her luckless personality a damnation worse than death, at the same time often barring her from her highest mission—maternity. That a universal law, acting through the ages, calling for unquestioned chastity in the maid and mother, should have had its effect in a large proportion of the sex in modifying the sexual organs and desires is not surprising; that it has not absolutely extirpated feminine sensuality is perhaps more surprising. The typical female impotent, then, is by no means a rarity. To her, in her life as maid, wife, or mother, sensuality is an inconceivable possibility. She loves, marries, yields, and bears children, happy, in a quiet way, in making others happy, playing her unobtrusive part in the quiet drama of life in absolute ignorance, personally, of that passion that, more than all other things combined, has fostered the finer arts or pitted man against man in deadly strife. Without effect on her procreative powers, her evolution has equipped her with rudimentary organs of copulation. With a cool, contracted ostium vaginæ deep sunken beneath the symphysis, with pale, thin labia, and a clitoris scarcely discernible by the most erudite touch, she represents the embodiment of the social ideal, whose happiness throughout life, at best of a negative type, is endangered only by her finding out her physical shortcomings and vainly striving toward its correction. This, however, is but an extreme ideal type; the opposite extreme, as previously indicated, is also often to be found, environed by dangers that only too often bear for the possessor most bitter fruits. It is neither with the hopeless first class nor with the often luckless second that I would deal; both are practically beyond redemption. But of the great mass of femininity lying between these two I would speak as a class only too commonly neglected, misunderstood, and misused by the overdeveloped male.

The sexual phase of sociology in its evolution has drifted the sexes widely apart. In the typical male, physical excitation is no longer an essentiality. A thought, a passing phantasy suffices to give full play to his sexual powers, while with the average female not only is contact necessary, but a retardation of response and a limited area of receptive excitability are the rule. That in the wild state of vertebrates all the tangible sexual organs, and notably the vaginal tract, act responsively to masculine contact during congress is evident, while the insensitive labia, vagina, and uterus of the average human female leave but the clitoris in its out-of-the-way location as an organ of possible excitation. To any one who has witnessed the evident mutual pleasure that occurs in the sexual congress of a stallion and mare, but one explanation of such result, viewed from the imperfect and clumsy action of the male, is possible, and that is that the mere intromission of his organ into a sexually highly sensitive vagina supplies the one essential to mutual gratification.

In conclusion, then, I would say that the primarily ruling causes in sexual impotence and incompatibility to-day are evolutional in their nature; that in the average being the influence of heredity acting through the ages has made man abnormally and perversely sensual and woman sluggish to a degree little short of absolute incapacity; that in this, as in other of the physical errors of our inheritances, the skill of science may and should be evoked for the common good. Necessarily it is through the male alone that such teachings may be brought to bear as shall correct this congenital disparity. He should, before entering upon the marriage state, be instructed in the laws I have outlined. He should be counseled in those means best calculated to encourage delay of the orgasm on his part, and the awakening of desire and its physiological development upon the part of his mate. He should be taught that happy sexual living means something more than selfish personal enjoyment. He should be reminded that in the holy life in the marriage-bed, awaiting his touch, are chords that shall vibrate in the years to come concordantly or discordantly, as he alone may determine. He should be impressed that, whatever the experiences of his past single life may have been, he has, in taking his marriage vows, assumed a sacred duty demanding on his part gentle, patient, and unselfish practices, by which may most certainly be assured that mutual happiness that, linked with mutual sexual pleasure, most strongly binds husband and wife together.

THE AXIS OF ASTIGMATIC GLASSES.*

By JOHN HERBERT CLAIBORNE, M. D.,
NEW YORK.

(*Concluded from vol. lv, page 718.*)

We come next to the consideration of the axis of astigmatism in each eye with relation to that of its fellow.

I. *Simple Hyperopic Astigmatism in both Eyes.*—In broad terms the axes correspond or are at angles to each other. If, for example, the axis of one eye be vertical, that of its fellow is vertical. If the rare occurrence of the axis in the horizontal be found in one eye, the axis of the fellow is also horizontal. Such axes are usually termed parallel. That this is not altogether correct is clear. If both axes be vertical, we may say that they are parallel; but if both be horizontal, they can not, strictly speaking, be said to be parallel. It seems to me better to describe them as correspondent or coincident, and I propose these terms indifferently to describe the condition mentioned.

If one axis be found to be 75°, its fellow axis in the other eye may be found to be 75°, and would, therefore, be said to be correspondent or coincident. The other axis, however, may also be 105°, in which case the two axes would not be correspondent or coincident. If, under these circumstances, the lines of the two axes be continued in an upward and inward direction, they would be found to intersect, and the angle at which they would intersect would be one of 30°. It is clear from the foregoing, then, that if the astigmatism in the two eyes be 15° from the vertical, it is possible for the axes of the two eyes to be correspondent, or, when not correspondent, to intersect at the angle of 30°. When the axis of one eye is 135° or 45°, that of the fellow is correspondent or at right angles. The three general conditions that are possible, then, for the axes in the two eyes are, first, correspondence or coincidence; second, an angle of 30°; third, an angle of 90°.

The following are the possible individual positions in simple hyperopic astigmatism in both eyes:

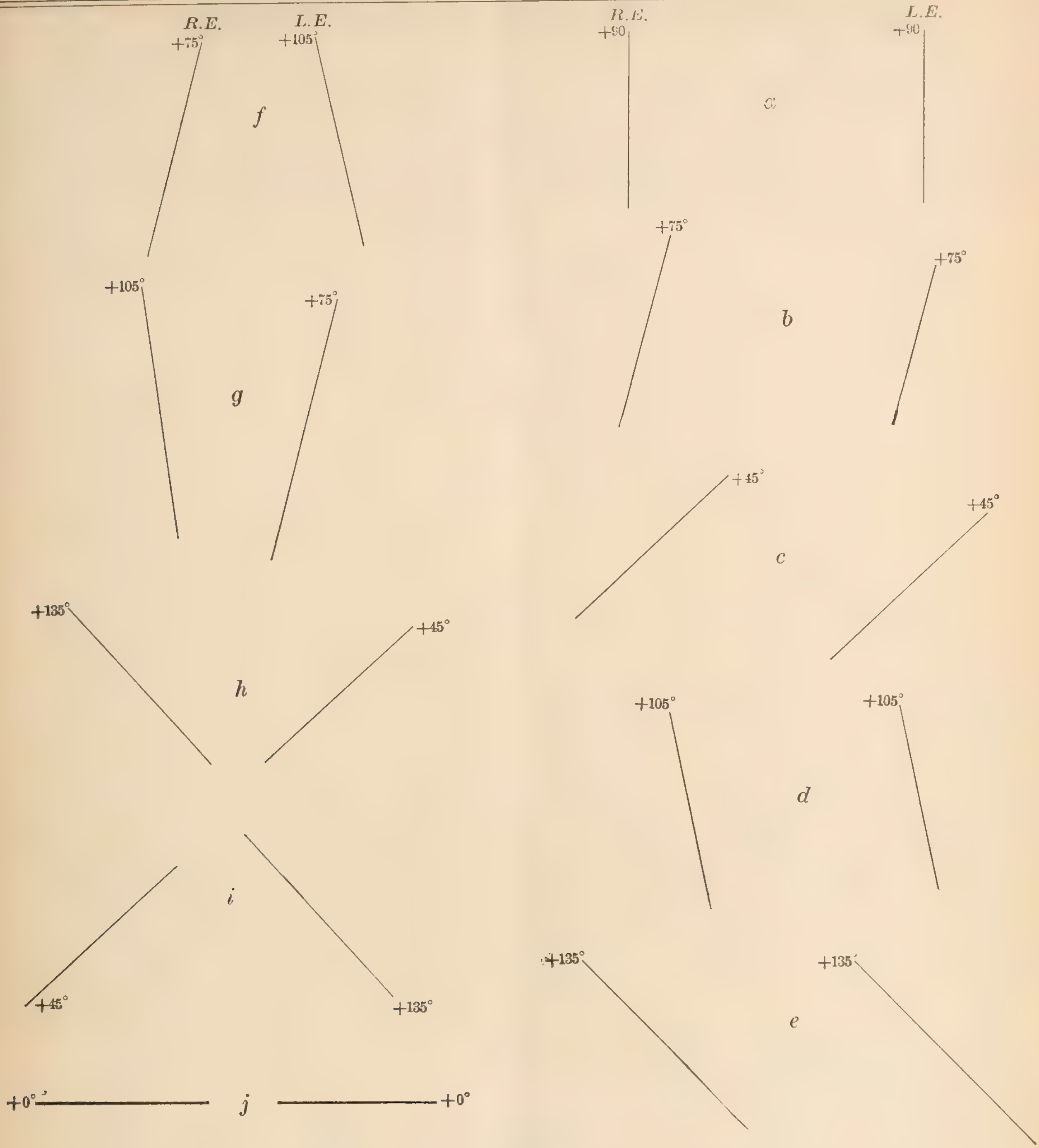

Fig. 4.

II. *Simple Myopic Astigmatism in both Eyes.*—If the axis of one eye be horizontal, the axis of the fellow is horizontal. If the axis of one be 165°, the axis of the other is 165°—that is, in correspondence; or the axis of the other is 15°—that is, the axes, if prolonged, would intersect at an angle of 30°. Only two general positions, then, are possible for the axes of myopic astigmatism in the two eyes.

The possible individual positions of the axes in simple myopic astigmatism in both eyes are shown in Fig. 5, page 9.

III. *Compound Hyperopic Astigmatism in both Eyes.*—The rules that have been drawn for the axes in simple hyperopic astigmatism in both eyes obtain for the axes of compound hyperopic astigmatism in both eyes.

IV. *Compound Myopic Astigmatism in both Eyes.*—The rules that have been drawn for the axes in simple myopic astigmatism in both eyes obtain for the axes of compound myopic astigmatism in both eyes.

V. *Mixed Astigmatism in both Eyes.*—In mixed astigmatism in the two eyes, the hyperopic axis is usually vertical in each eye and the myopic axis in each eye is usually horizontal. Whenever the reverse position of these axes occurs, correspondence still obtains—that is, both concave cylinders are vertical and both convex cylinders are horizontal. This, I believe, is very rare. Matters become somewhat complicated the moment any departure from the most usual position takes place in mixed astigmatism. If the axes of the convex cylinders be both at 75°, the axes of the concave cylinders are both at 165°. If both convex cylinders be at 105°, both concave cylinders are at 15°, and consequently each cylinder would be in correspondence with its fellow cylinder of the same quality in the other eye. The convex cylinders, however, may be at the angle of 30° to each other, which would cause the concave cylinders also to be at an angle of 30° to each other. When the axis of the astigmatism in the two eyes is at 135° or 45°, the convex cylinders may be correspondent and the concave cylinders correspondent, or the convex cylinders may be at right angles to each other and the concave cylinders at right angles to each other.

The following are the possible individual positions of the axes in mixed astigmatism in both eyes:

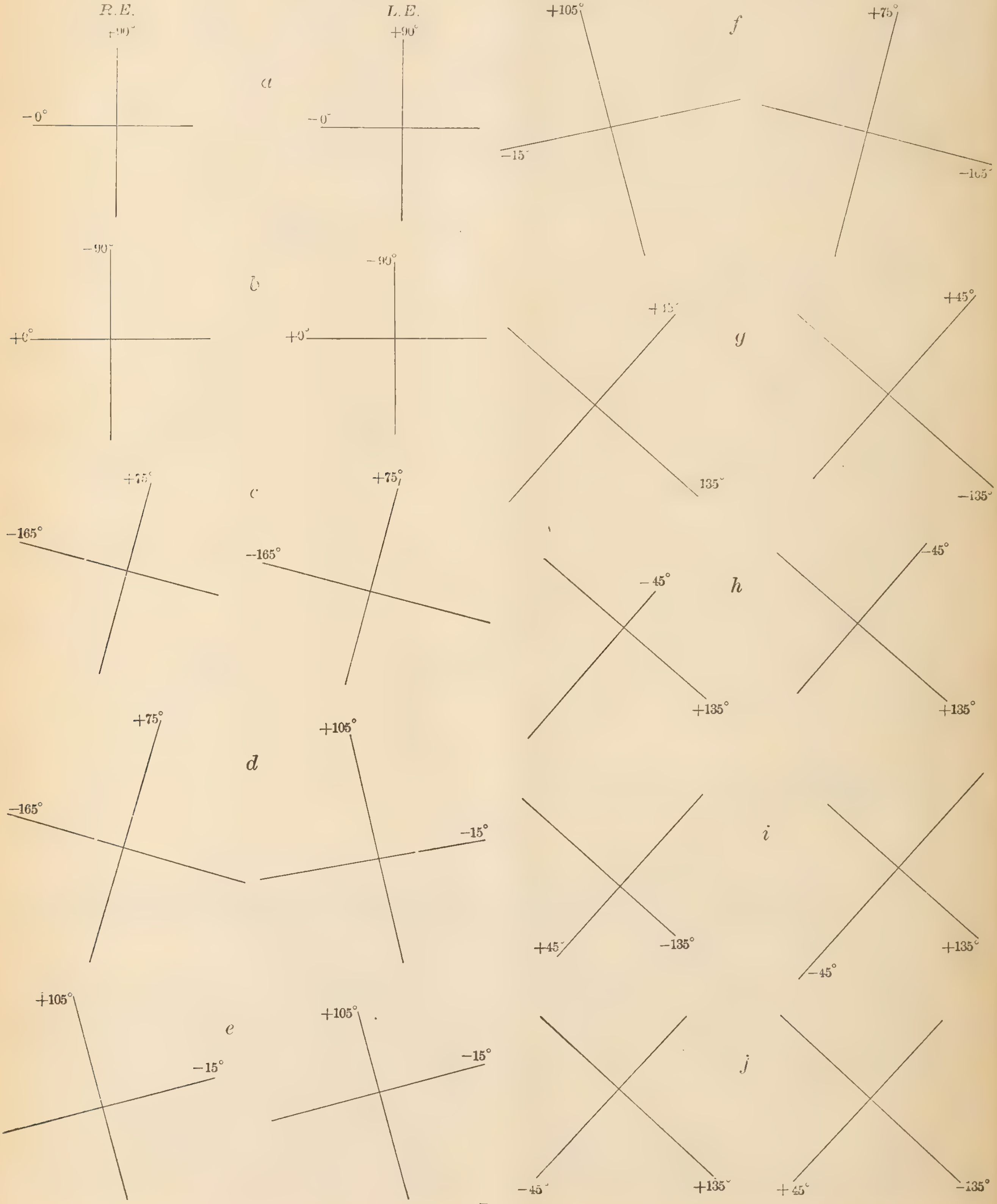

FIG. 6.

In looking over a large number of prescriptions from the work of others in various directions, I have observed that in many cases the ideas I have delineated above have not been followed. I have frequently known prescribed such an axis as 155° in the one eye, while the axis in the other was not in correspondence. I have even seen prescriptions in which the axis was written as occurring in the intervals of a degree; for example, 120·5°. I believe such axes to be wrong. The rules that I have formulated for the axes of astigmatism assist me greatly in finding the axes with rapidity and precision, and I am accustomed also to use retinoscopy first in examination. For example, if the course of the shadow be slightly from the vertical, I suspect 15° or 165°, as the case may be. If further from the vertical, I suspect 135° or 45°. If it be just off the horizontal, I suspect or 105° or 75°.

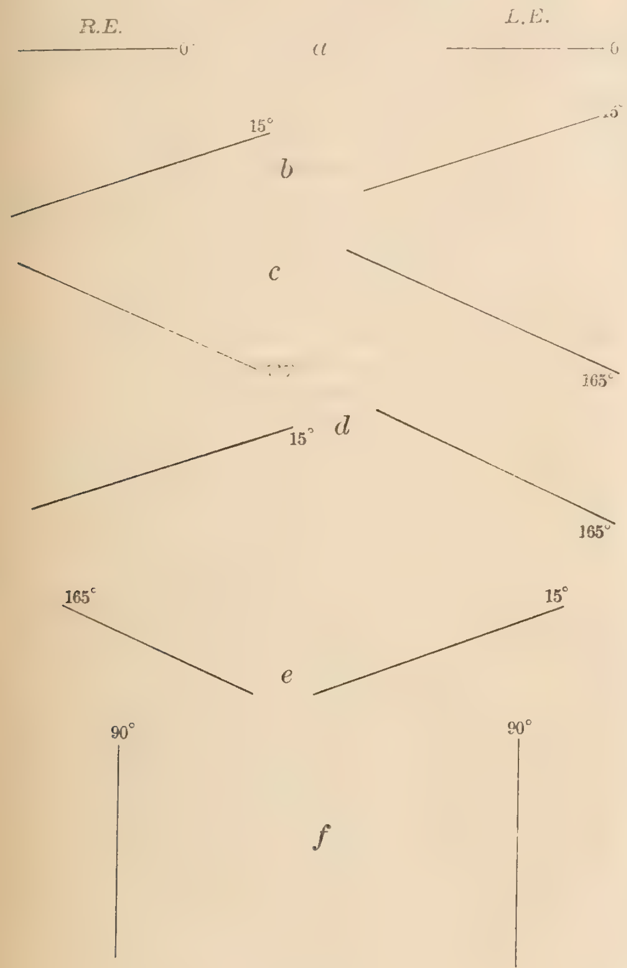

Fig. 5.

This method of examination, together with the rules I have framed for myself, assist me materially in the functional examination, and therefore I lose no time in wandering around the circle. Of course, I do not rely altogether upon retinoscopy, and I do not force the patient to accept the axes which my retinoscope suggests, but I place the cylinder in the *possible* positions for his error, and regard the result on the test-cards as the *experimentum crucis.* I have not used the ophthalmometer for the detection of astigmatism and its axes as much as I have used retinoscopy, but whenever I have used it I have found it to give results that tally with the formulæ suggested.

In conclusion, I would reiterate my belief in the non-existence of catastrophism in the axis of astigmatism. As there have been found regular laws of development in all departments of Nature that have been scientifically studied, so I believe a definite rule of arrest of development or over-development may some time be found in all cases of abnormity. That such is the case with reference to the axis of astigmatism I reiterate I feel convinced. Under any circumstances, I offer the propositions herein contained as formulæ, the correctness of which experience may prove or disprove.

Note.—I do not desire to produce the impression that I have seen mixed astigmatism with the axes in *every one* of the possible positions indicated in Fig. 6. I mean to say that all those *individual* positions are possible in view of the propositions made with reference to the axes in simple hyperopic and simple myopic astigmatism in a single eye. I have found coincidence of axes in astigmatism rare, but it nevertheless exists.

A CONTRIBUTION TO THE
TREATMENT OF URETERAL FISTULA.[*]

By FRED. KAMMERER, M. D.,
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I HAVE twice had the misfortune of wounding the right ureter in difficult abdominal operations, with the result, in each case, of establishing a uretero-abdominal fistula. On the other hand, I have in both instances, during the further course of treatment, had the good fortune of effecting a complete cure by nephrectomy, the remaining kidney having fully assumed the functions of the organ removed. A report of the first case was given to the surgical section of the Academy [†] a year ago, but the patient was not presented at that meeting. I am pleased to show her this evening, a year and a half after the last operation, in perfect health. Her history, read at the meeting referred to, is in part the following:

CASE I.—F. R., aged twenty-nine, married at eighteen, has had two miscarriages; has been ailing ever since the last miscarriage, three years ago. On admission to the hospital she was suffering from double pyosalpinx, complicated with pelvic peritonitis. On the right side a tumor of the size of an orange, firmly imbedded in adhesions, was found. The left ovary and tube were affected in a much less degree. Laparotomy was done on August 6, 1890, and the removal of the diseased appendages accomplished with much difficulty, owing to the adhesions with the intestines and the pelvic wall. To the right of the uterus many ligatures were necessary before the mass could be removed. The removal of the left appendages was more readily accomplished. An iodoform-gauze tampon was introduced into Douglas's pouch and the rest of the abdominal incision closed. At the end of forty-eight hours the tampon was removed and the abdominal incision entirely closed. During the first few days there was considerable rise of temperature, but this quickly subsided and the patient seemed on the road to complete recovery. On the seventeenth day, after feeling unwell for several days, she developed symptoms of intestinal obstruction. The abdomen was distended and tympanitic, excepting dullness in the right lumbar and iliac regions. Temperature, 103·6°. Careful dissection at the lower end of the abdominal cicatrix showed that no intestine was adherent at this point, as had been assumed; the area of dullness, moreover, corresponded to a part of the abdominal cavity shut off by adhesions, from which a large quantity of sero-purulent fluid escaped, having a distinctly urinous odor. In the further course of the case an abdominal urinary fistula persisted. Cystoscopy and various tests, described at the time, which I will not repeat here, demonstrated that the fistula was ureteral and not vesical. Subsequently the patient developed a large abscess in the lumbar and iliac regions, which was opened by a lumbar incision. After thorough disinfection and every necessary precaution, lumbar nephrectomy was done at the same sitting. The enucleation of the kidney was easily accomplished and the patient made an uneventful recovery. Accurate measurements of the quantity of urine secreted in every twenty-four hours were made, and within two weeks the latter had increased from ten ounces on the first day to about fifty ounces. During this time traces of albumin were occasionally found, but no blood or casts. The patient now passes normal quantities of urine, of 1·020 specific gravity, containing no pathological elements.

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[*] Read before the New York Surgical Society, March 23, 1892.

[†] *Medical Record*, March 28, 1891.

Case II.—M. D., aged forty-five years, has been married twenty-seven years; has had one child during the first year of married life. She first noticed an increase in the size of her abdomen three years ago, but not until lately has she experienced any discomfort from this cause. Now she is troubled with spells of faintness, dyspnœa, general weakness and fatigue on exertion, and œdema of the lower extremities. For the last nine years menstruation has been very irregular, and especially lately very profuse, producing marked anæmia. She was admitted to the hospital June 17, 1891, suffering from an attack of peritonitis, which lasted four weeks. On August 7th, the peritonitic symptoms having subsided, I made an examination under ether. A large tumor, continuous with the cervix uteri, of regular contour, occupying the entire abdominal cavity, was found. The uterine sound passed far to the left for six inches. The size of the tumor excluded the possibility of palpating the other abdominal viscera. The diagnosis was made of a fibroid having originally developed into the right broad ligament. On August 13th an incision was made from the pubes to the ensiform cartilage, and even then it was not an easy matter to develop the greater part of the tumor from the abdominal cavity. Now it became evident that the growth had unfolded the broad ligament on the right side, and that its removal necessitated enucleation from the pelvis. The bladder was found lying completely on the anterior wall of the tumor; the vesico-uterine excavation was entirely obliterated. There were also adhesions to the intestines from the previous peritonitic attack. On the right side it proved a very tedious task to tie off the vessels, owing to the close proximity of the tumor to the wall of the pelvis, and a great amount of upward traction had to be made by the assistant on the tumor to enable me to work at all. Finally, after separating the bladder from the anterior wall and enucleation of the rest of the tumor, an elastic ligature was applied and supravaginal hysterectomy was completed, leaving a very broad stump held in place by two transfixion needles. The abdominal incision was closed and a small iodoform-gauze tampon introduced above the stump reaching to, but not into, the peritoneal cavity. The patient was now in a critical state, but she rallied well.

At the end of the third day, after the patient's condition had been again growing gradually worse, she presented the symptoms of well marked peritonitis and septic poisoning. Her pulse, when I saw her, averaged between 140° and 150°; her temperature was 101·9°; her respiration was accelerated, and her face slightly cyanotic and pinched; vomiting, which had persisted with greater or less intensity since the operation, was now more frequent, the stomach retaining nothing; the abdomen was tympanitic. I had already decided to leave the patient to her fate, but, feeling confident that death would ensue in a short time if nothing was done, I decided to reopen the abdomen above the stump as a last resort. An attempt was made to give ether, but, the pulse rising in frequency and becoming irregular, this was abandoned, and the abdomen reopened, the patient being in a semi-comatose condition. The intestines were injected, but there was no deposit of lymph on them, nor were there any fresh adhesions. On the other hand, quite an amount of more serous than purulent fluid escaped from the general peritoneal cavity. The intestines were held up and a large tampon was introduced into Douglas's *cul-de-sac.* In the afternoon (the operation was done in the morning) the patient had only somewhat rallied, but it was already evident that she had mastered the septic condition that was threatening her life. She continued to improve during the following days, during which time there was constant oozing into the dressings, which had to be frequently changed. For the next two weeks she progressed favorably. The tampon had been removed from the peritoneal cavity and its tract was rapidly closing. The large, sloughing stump was still lying in the wound, but, owing to removal of the transfixion needles, had retracted considerably into the peritoneal cavity. On this account the cutting of the elastic ligature was not so easily accomplished; but, when the latter was withdrawn from underneath the stump, a steady flow of urine almost immediately began from the abdominal fistula. The presence of the stump made it impossible to locate the fistula, and when it did finally come away it left a conical opening which slowly filled with urine. When continuous and moderate pressure was exerted on the right kidney, the flow from the fistula very markedly increased. After several weeks it became, however, suddenly arrested, and urine began to escape involuntarily from the vagina—as vaginal examination proved, from the vaginal portion. This condition existed for the following month, the fistula at times emptying into the wound and at times into the vagina. A sound could easily be passed from the external fistula through the uterine stump and vagina into the vulva. Injection of the bladder showed that viscus to be intact, evidenced also by the clear urine from the bladder, in contrast to the turbid urine from the vagina and abdominal fistula. Cystoscopy was not very satisfactory, very likely dependent on the changed configuration of the bladder. However, urine was seen issuing from the left ureter, but I could not determine whether any urine escaped from the right ureter or not. It did occasionally seem as if a small quantity entered the bladder—very irregularly, however. During October and November the abnormal flow of urine ceased almost entirely for a time, and then recommenced. During November the general condition of the patient was not so favorable; her evening temperatures were above the normal, and she occasionally complained of pain in the right side. This continued until nephrectomy was done on December 11th. During the week before operation she passed fifty-five ounces of urine in twenty-four hours by the urethra, this being the average of a week's measurements. The only difficulty encountered during the operation consisted in the enucleation of the kidney from its capsule at some parts, where it was more firmly adherent. The wound cavity was treated with iodoform-gauze packing. Within two months complete healing had taken place, and a little later the abdominal fistula also closed spontaneously. The patient is now apparently in perfect health. The secretion of urine is normal in quantity and quality.

In the first of the cases shown this evening the ureter was no doubt caught in a ligature *en masse* and divided, whereas in the second case it was probably only partially included in the elastic ligature securing the stump of the uterus. Many points seem to suggest this explanation. Very great traction had to be exerted on the large tumor to allow at all of the application of the ligature, and probably the ureter was thus drawn up within reach of the latter. Furthermore, the leakage only became manifest when the elastic ligature was withdrawn, and then the frequent and prolonged complete arrest of the flow of urine from the fistula, in connection with the fact that simultaneously normal quantities of urine were secreted from the urethra, can only be explained on the assumption of a lateral opening. Why this should have occasionally closed, allowing the urine to flow into the bladder, I can not say. That such was the case is evident, for the normal quantity of urine passed on these occasions by the patient could not have been referred to the sound kidney alone. No compensatory hypertrophy had yet taken place, otherwise the normal amount of urine should have been passed at an earlier period, following nephrectomy. This, however, was only the case three weeks after operation.

In reviewing the literature of the last years I have found eleven cases of nephrectomy for ureteral fistula. These include six of the abdominal variety (Simon, Lefort, Bertini, Thornton, Billroth, and Pozzi) and five of the vaginal or uterine (Credé, Zweifel, Gusserow, Van der Weerdt, and Boeckel). Two other cases of abdominal fistula have been reported by Müller and Hegar, in which nephrectomy was not done. In all of the abdominal fistulæ, excepting Lefort's case, the ætiological factor was injury to the ureters during difficult abdominal operations. In Lefort's case the fistula developed as the result of a stab-wound in the right lumbar region. Of eleven cases in which a communication existed with the vagina or uterus, seven were due to traumatism during parturition (Nicoladoni, Kehrer, Credé, Van der Weerdt, Schede, two cases, and Zweifel), and four (Kaltenbach, two cases, Boeckel, and Gusserow) developed after vaginal hysterectomy. Although I have not made a very thorough search for cases of the latter kind, it hardly seems possible that an operation so frequently done as vaginal hysterectomy should be so rarely associated with injury to the ureters when the proximity of the latter to the cervix uteri (an inch) is recalled. Gusserow tells us that this accident has happened to most operators who have frequently done vaginal hysterectomy, but I have not found any authority for this assertion, although the same statement from other operators is familiar to me. Adding to the eleven cases of nephrectomy for ureteral fistula my own two, we have thirteen cases, with two deaths (Billroth and Lefort). In one of them death occurred on the eleventh day after operation (Billroth) from insufficiency of the remaining kidney, in a patient who was operated upon many months after the original injury, and had been subjected to a good deal of catheterization of both ureters without any permanent result. She was withal in a very bad general condition for the operation. The other case was also one of seven months' standing before nephrectomy was resorted to (Lefort). The patient died on the second day after operation, and an abscess was found at the site of the removed kidney. I do not think that these two cases will weigh heavily in estimating the dangers of nephrectomy for fistula. They were done eight and twelve years ago, when the technique of the operation was not so well established and antiseptic surgery not as yet so universally accepted. I do not expect that the assertion that extirpation of the *normal* kidney is a sure and safe operation, unattended by many risks, will meet with any serious opposition in this society. On the other hand, it can not be denied that inflammatory thickening and adhesion of the capsule to the kidney make the enucleation of the latter a much more difficult operation. This was the case in Lefort's patient, and the same impression I certainly gained from my two cases. In my second case there was present well-marked pyelitis, and several purulent foci were found in the substance of the kidney; inflammation had spread to the peri-renal tissue, and the operation was not accomplished so readily as in the first case. We can conclude, then, that nephrectomy, when undertaken at not too distant a period after the primary injury to the ureter, is a very safe surgical procedure, provided the remaining kidney is in a healthy condition, and it can be accepted that no evil results will later on follow from the removal of the organ, when the compensatory function of the remaining kidney is well established. The first of these conditions must, of course, be decided in each individual case; the latter, I think, we must grant, in view of experimental and clinical evidence. In deciding about the condition of the kidney with intact ureter, we are more fortunately placed in these cases than in cases of renal disease. With the aid of the cystoscope we shall generally be able to determine that no urine reaches the bladder from the injured ureter, and then the problem is readily solved by examination of the urine passed by the urethra. It is well to bear in mind in this connection that a kidney secreting turbid urine may be able to do the work of secretion for the economy, while another kidney secreting clear urine may, after extirpation of its fellow, prove inadequate to this task. I operated in a case of tubercular kidney a year and a half ago which well illustrates this. The left kidney was removed for far-advanced tubercular disease, but the right kidney, although also slightly affected at the time of operation, has assumed the functions necessary for the maintenance of life. The urine at present contains about the same amount of leucocytes and albumin as after nephrectomy. One, or perhaps several, tubercular foci are present in the remaining kidney, communicating with the pelvis; but other parts of the renal tissue were not affected and were capable of compensatory hypertrophy, whereas in diffuse lesions of the kidney no hypertrophy is possible. I do not think that this point, first insisted on by Tuffier, has received the general consideration it merits.

The repair of vaginal and uterine fistula has been attempted with varying success. In these cases the vesical end of the ureter after a lapse of time is generally found occluded, or at least impervious to catheters introduced from the bladder or vagina. For this reason a large vesico-vaginal fistula has generally been established as the first act of a plastic operation for the relief of these cases. Following this, the two openings have either been put in communication with one another by converting part of the vaginal vault into a channel, or by secondary colpokleisis, partial or complete. In many of these cases, however, the operation has not been attended by success, or only after many attempts, and in some nephrectomy had to follow as an ultimate measure of relief. Thus Zweifel attempted three plastic operations, which were unsuccessful, and finally, after the patient's husband objected to colpokleisis, successfully performed nephrectomy. Kehrer was successful, but left a vagina only two inches long. Gusserow observed contraction of the vesico-vaginal fistula, which he had established, and on this account, later on, rupture of the originally successful colpokleisis. After enlarging the vesico-vaginal opening, colpokleisis was a second time resorted to. A year later the patient returned to the hospital with formation of phosphatic concretions in the pouch above the obliteration, necessitating a reopening of the latter. In one of Kaltenbach's cases a similar mishap occurred after partial colpokleisis, but a fourth operation was not done, as a recurrence of cancer had in the mean time appeared. Schede observed severe symptoms from stenosis at the site of the fistula after successful plastic closure, and was obliged to catheterize the ureter for a long time. Compare with this the five cases of nephrectomy for uretero-vaginal or uterine fistula, which all recovered and did well. One died six months later from recurrent cancer after vaginal hysterectomy, and has therefore no bearing on the question under consideration.

For abdominal fistula I do not believe any other procedures than nephrectomy have been seriously entertained. There are only the two cases of Hegar and Müller, previously referred to, in which attempts seem to have been made of closing the fistula. Müller cut into the bladder, making a communication between it and the funnel-shaped sinus, and then attempted to close the fistulous opening, but did not entirely succeed. Hegar reunited the ureter with the bladder. Everything seems to have gone well, and although the external wound did not primarily close, it afterward completely cicatrized. These cases were reported in 1879, and I very much regret that the only reference to them I can find is very incomplete and about embodies what I have said. It is difficult to understand how a channel lined with granulations could permanently secure the uninterrupted flow of urine from the kidney to the bladder. In Hegar's case I have not been able to discover how so delicate an operation was done after a fistula had once become established. These attempts do not appear to have found any imitators. In Billroth's case Pawlik, after much torture to the patient and perhaps to himself, finally succeeded in passing a catheter through the ureter into the pelvis of the kidney, but an attempt to leave it *in situ* had to be abandoned. From what has been said, nephrectomy appears to be the only proper treatment for abdominal, and in many cases also the only one for vaginal and uterine fistula. When we recollect the many failures after plastic operations in the vagina, the inconveniences to which some of these patients were subjected, I question the wisdom of not resorting to nephrectomy in all cases of ureteral fistula. When we remove a kidney under the conditions and precautions before stated, we know that we are not robbing the system of half of its renal tissue. We know that in a short time renal tissue is reproduced, that we are not permanently throwing on one organ the work of two, but that soon one kidney, having almost the same secreting power as the original two, is in activity.

When during an abdominal operation we become aware of having wounded the ureter, what is the proper course to pursue? There are several ways of dealing with such mishaps. Immediate nephrectomy may be done, or the renal end of the ureter may be transplanted to some part of the abdominal wall. Both these methods have been successfully practiced. The first would seem to be indicated in cases in which the ureter has been irreparably damaged and when the condition of the patient, who has generally passed through some serious abdominal operation, still admits of nephrectomy being performed. In both of my cases, even had I been cognizant of the injury to the ureters, the condition of the patients did not warrant any further surgical procedure. We must also remember that the increased demands upon the remaining kidney during the days following nephrectomy, while easily responded to when no complication is present, might prove too great when the patient is already struggling against the shock from a severe and prolonged laparotomy. It was this consideration mainly, coupled with the conviction that transplantation of the ureter to the abdominal wall was not quite as simple an alternative as it might seem, that led me a year or so ago to make the proposition of ligating or securing with a forceps the renal end of the ureter and of tamponing that part of the abdominal cavity leading down to the seat of the injury. I reasoned that in a day or two the forceps could be removed or the ligature would part under pressure from the distended kidney, and the urine could then find its way along the tract of the tampon and a uretero-abdominal fistula become temporarily established. Acting on this suggestion, I have also thought that if any possibility existed of repairing the damage done to the ureter, it ought always to be attempted even if the chances of success are very small. The lumen of the ureter being unobstructed in this case, and no pressure from distention following, as when a ligature has been applied, the danger of leakage is much diminished and indeed is not present before the tampon has effectively shut off the general peritoneal cavity. It may be interesting to mention in this connection that Thornton once reopened the abdomen on the day after laparotomy, suspecting some lesion to the ureter, and, finding it flooded with urine, fastened the cut ureter in the loin; still no peritonitis supervened and the patient recovered entirely from nephrectomy done several months later.

In temporarily closing the renal end of the ureter, as I had suggested, are we running any additional risks for the patient? My proposal at the time was based on the lack of any unfavorable symptoms following accidental ligature in my first case, and upon the authority of no less an experimental pathologist than Cohnheim,* who, after an experience of many ligatures in dogs, states that ligature of one ureter only is followed by no reduction in the quantity or change in the quality of the urine secreted by the animal. In the second case I have given my reasons for assuming that the ureter was at no time completely shut off. But I have since then, in a case of sacral hysterectomy, tied the ureter and cut it intentionally * and have watched for symptoms, but have observed none, excepting a very much diminished secretion of urine, the importance of which I do not wish to underestimate. Theoretically, several complications might arise from the ligature—viz., uræmic intoxication, renal colic, and suppression of urine in the other kidney. Of the first of these possibilities I have no great fear. But such has been expressed to me personally by others, and in the late edition of one of our standard text-books of gynæcology I find the following statement in reference to ligature of the ureter during operations: "The patient usually died of uræmia from retention of urine in the kidney of that side, or recovered with a fistula," etc. When the ureter is firmly occluded the kidney will secrete urine and expand its own pelvis until the secreted fluid stands under a certain pressure (far less than the blood-pressure), when the kidney will cease to secrete. Then absorption begins, chiefly of the watery element of the urine. Assuming that the other kidney continues in its normal function, there is no combination of secretion and reabsorption that I can imagine which could lead to a fatal issue.

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* *Vorlesungen über allgemeine Pathologie*, vol. ii, 1880, p. 395.

Regarding the second possibility—renal colic—my personal experience is decidedly negative. In none of the cases referred to have the patients complained of pain at the site of the affected kidney, nor has later examination of the two patients that recovered elicited any statement in this direction. My clinical observations are not isolated ones. Billroth, for example, in the publication of his case, asks for an explanation of the fact that his patient suffered no such severe pain in the region of the kidney as generally follows ligature of the ureter. Gusserow, in his case, speaks of severe colicky pains in the region of the kidney on the second and third days after operation, but explains the lack of symptoms of renal retention in some cases as the result of the loss of blood during the operation and the consecutive low blood-pressure—a very acceptable theory indeed! It explains, at the same time, the continuance of secretion of urine from the sound kidney, and the arrest of such secretion into the pelvis of the kidney with ligated ureter at a stage of very slight distention. I have found no other cases of ligature of the ureters in which severe symptoms of renal retention were observed, but these cases are in themselves very few. At all events, it appears evident that the patients often suffer no inconvenience from temporary occlusion of the ureter. From a study of some of Guyon's late articles relative to this subject, I am, however, convinced that, under ordinary conditions, ligature of the ureter will produce the symptoms of renal retention.

The possibility of suppression of urine following ligature of the ureter seems to me to include a great element of danger. I think my case of sacral hysterectomy can lay claim to almost the value of an experiment in this direction. On the first two days the amount of urine secreted in twenty-four hours was only a few ounces. On the third day, when the ligature of the ureter gave way, twenty ounces were passed by the bladder and much urine flowed from the wound into the dressings. This is entirely in accord with what we know about impaction of a calculus in one ureter alone. Leguen has found thirty cases of anuria from this cause. The interesting case of Godlee of suppression and uræmia, which ended fatally, is well known. There is no reason why a firm constriction of the ureter by a ligature should not give rise to the same reflexes that an impacted calculus occasionally excites, leaving out of consideration, for the moment, whether such reflexes are of ureteral or renal origin. Why they should now and then be present, at other times missing, is still, I think, unexplained. At all events, the apparent danger of this procedure would lead me to modify somewhat my former proposal. If for any reason repair to the damaged ureter or transplantation of its renal end were unadvisable, I would not risk placing a ligature on the latter, but should close it by an instrument that I could conveniently remove in case of necessity. From what I have observed, I do not believe that the latter would arise before the peritoneal cavity had been shut off by adhesions due to the simultaneous introduction of an iodoform-gauze tampon, a precaution which ought not to be omitted.

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The Denver Medical Times.—The July issue of this excellent journal comes to us in a new dress and an enlarged form; an appropriate celebration of its twelfth anniversary. May it have "many happy returns."

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* *Medical Record*, February 20, 1892.

CONTROLLING SEX IN GENERATION.

BEING A REVIEW OF THE SUBJECT, WITH A NEW RULE AND OBSERVATIONS ON THREE HUNDRED AND ELEVEN CASES IN THE HUMAN FAMILY.

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Ever since the little episode between Jacob and his good uncle Laban occurred—as depicted in the book of Genesis—the subject of affecting the offspring of man and animals has occupied the attention of philosophers and sages, of physicians, veterinarians, and breeders. It has been found of interest for many reasons—economic, prudential, and philanthropic. Its great importance will readily be appreciated when it is understood that in the New England States alone there is an excess of females over males, of marriageable age, of more than 250,000; that in Philadelphia city and county this excess reaches 30,000, and that it is continually increasing at the rate of eleven per cent. per decade. This condition of things makes it impossible for so many females to fulfill the scriptural injunction, and, moreover, it condemns them to the lot of spinsters—a lonely, unhappy, and unhallowed existence in life and dying "unwept, unhonored, and unsung," being a sad commentary on the nothingness of human existence. Inasmuch as the state depends on the male portion of its inhabitants to pay its taxes, fight its battles, build its highways and bridges—in fact, to maintain its very existence—its economic value to states and nations is self-evident. It may be asked, in view of the fact that there are more male than female births the world over, how this state of things can exist. It is true, according to the statistics collected by Oesterlin,* that of 59,350,000 births in Europe, for every 1,000 female births there were 1,063 male. But it will be understood that many diseases of infancy and childhood are much more destructive to the males than to the females. Thus, when the fifteenth year is reached, the excess of births is swept away, and this condition of things continues in operation until, at the marriageable age, the excess existing at birth is changed into a disparity, as before stated. The subject is of especial interest and importance to the physician, particularly if he have an extensive obstetric practice. Aside from the advantage of being able to prognosticate to a pregnant woman the sex of an expected infant, it will certainly enhance his reputation if, in addition to this, he be able to offer reasonable and intelligent advice, with a view to enabling her to accomplish the darling wish of her heart, for a child of a particular sex. Indeed, he owes it to himself that he be at least as well versed in this matter as the nurse, or any of the old ladies who frequent the lying-in chamber. If any authority exist on such matters, it is desirable that the physician should be that authority. It is conceded on all hands that, by attention to breeding, the size, color, and general conformation of animals can be affected and modified; that the breed can be improved, especially for certain purposes; that a certain method will produce speed, while another will produce size, strength, etc. Thus, by in-and-in breeding, hens are made better layers and cows better milkers. An example of this is found in the island of Jersey, an island so small and isolated that in-breeding is practiced here as nowhere else; indeed, it has been said that there has not been a cross to this consanguineous breeding for many hundreds of years. This breed is known for the large quantity of rich, fatty milk it produces.

But if our ability to control color, size, strength, etc., is conceded, it is not so generally admitted that we can control the sex. To my mind, however, there is no inherent difficulty attaching to the one proposition more than to the other. I believe that by attention in mating, studying the physical condition of the male and female about to copulate, we can control the sex, not only of our domestic cattle, but of the human race as well. Many of our cattle-breeders insist on this ability to control the sex of their cattle, and many of our best veterinarians think it quite within the bounds of probability. The notable thing about the matter is, that it is the shrewdest men, the closest observers, and the largest breeders, and hence the ones having the greatest opportunities for observation, who maintain this ability to thus control the sex of the cattle, whereas it is generally those who have never experimented or thought seriously on the subject, and who are governed by impulse or prejudice, who deny and treat the subject as a matter for laughter.

Although there has been a general consensus of opinion in favor of the proposition of controlling the sex of the offspring of man and animals, many and diverse were the plans for its accomplishment and many the hypotheses as to how Nature developed the sexual system, when and where the germ renounced its condition of asexuality and became mono-sexual—male and female.*

In our consideration of this subject, let us first see what were the opinions held by students of the subject in ancient and modern times, then consider which seems to be supported by facts, and finally see what is shown by the study of three hundred and eleven cases of births of which notes were made in my practice and in which the sex of the children was prognosticated before birth. At different times and ages, as well as by different observers in the same age, almost everything in the heavens above and in the earth beneath was ascribed as the determining cause of sex—thus the months, the seasons, the winds, the moon's phases, and many other objects. Bailly believed that the winter months were more favorable to the generation of males and summer to females. Virey † believed the reverse was true—that males were most frequently begot in summer and females in winter. Riecke maintained May, October, November, and December were the months most favorable to the generation of males. Fourier, however, demonstrated the falsity of these views, and Warer coincided with him. Michael Procope thought that sex depended on whether the semen came from the right or the left testicle. Henke and Millot applied the same reasoning to the ovaries. Aristotle, Saint Thomas, and Tiedman believed that we are primarily females, or unfinished males. Boudin Hoffacker, Sadler, and Dr. Lucas thought that the relative age of the parents was the controlling element; that old men have more boys and old women have more girls. I think this is true if by age is meant senility, and the age much greater than their mates. Thury, Autenrieth, Ackerman, Meckel, Serres, Schirac, Huber, Warner, Cornez, and Coste proved, by experiments on animals, fowls, and insects, that the degree of maturity the ovum has attained at the moment of fecundation is the sole determining cause of sex; that at the commencement of heat the ovum, being imperfectly developed, commonly produces females, whereas later, when it has acquired perfection, it produces males. Dr. M. E. Chapin, D. V. S., assures me of the truth of this observation, and it agrees with the experiments of Dr. Gourier, though he draws different deductions from it.* Moreover, the fact that breeders notice that among horses and cattle the male is carried some weeks longer than the female, gives it countenance.† Avicenna thought that man was predestined to procreate males. Buffon considered the ovaries and testicles as analogous, and thought that the female secreted semen as well as the male, and that the sex of the embryo depended on which parent furnished the largest quantity, each transmitting its own attribute. Minot,‡ Knox, and Webber regarded the germ as hermaphrodite at an early stage of its development. According to the traditions of the Greeks as preserved in the writings of Aristotle, which, according to Dr. Lucas, were elaborated by Vennette, Virey, and Damangeon, the ancients believed that winds from the heated equatorial regions enervated the vital faculties, and thus rendered males incapable of producing their sex so frequently as when winds from northern latitudes prevailed. This would indicate that they thought it required a greater amount of vital force to produce male than female children. Otherwise, why would not the southern winds have the same enervating influence on the female, and induce a like incapacity in her and thus render her unable to produce her own sex? Pliny, Collumelle, and Elien, among many others, investigated this theory, and found it had no foundation.

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* *Reference Hand-book of the Medical Sciences.*

* Minot. *Hand-book of the Medical Sciences.*

† Virey. *Philosophie de l'histoire ou des phénomènes de 'organisation des animaux et des végétaux*, Paris, 1835.

We have now reviewed the principal beliefs of ancient and modern times, and will pass without further comment to the consideration of those most recently formulated. The study of this subject has recently received a new impetus from the experiments and original ideas of Mr. D. D. Fiquett and Mr. Thomas B. Armitage, as published in the different agricultural papers, and the little book by Samuel Hough Terry and the translation from the French of Dr. H. M. Gourier's valuable little book and the able editing of the same, as well as by the original investigations of Dr. F. D. Pierce, of the Union Springs, New York, Sanitarium. To these books, especially Dr. Pierce's, I am indebted for much valuable information used in the preparation of this paper. These writings served to awaken anew the interest in this subject, eliciting an editorial from one of the leading New York medical journals and some very interesting letters. On reading these I became interested especially in the theory promulgated by Mr. Terry, of the correctness of which I felt almost convinced. I determined to put it to the test of experiment on the human race in my own practice, and to get what information I could from breeders and veterinarians about cattle. The method adopted consisted in sending letters of inquiry, propounding a series of questions, to leading breeders of cattle and veterinary surgeons. For myself, I made observations by making notes of my obstetric cases. After noting the comparative vigor of the parents and prognosticating the sex of the infants at whose introduction into the world I officiated, I divided the parents into three classes, as follows: Where the vigor of both parents seemed equal; where the vigor of the father was noted as greater than that of the mother; and, lastly, where the vigor of the mother was greater than that of the father.

TERRY'S HYPOTHESIS.—Mr. Terry's theory for controlling the sex may be more forcibly than elegantly expressed by the saying—common among the rural population—that "any boy can get a boy, but it takes a man to get a girl." He says on page 57: "After much casting about to discover some physical law or laws that would, if applied, cover all observations and general conclusions drawn from them, the following was eventually settled upon: That at the generation of male offspring the mother must be in a higher degree of sexual *excitement* than the father; and, reversely, at the generation of female offspring the father must be in a higher state of such excitement than the mother." He goes on to say: "A remark made to the writer by a countryman of his acquaintance, with whom he was conversing on the subject, somewhat accidentally, led to this; it was that he could always tell when his wife was conceiving a boy, for she did all the work. While this may be regarded as an exaggerated remark and such one-sided activity seldom required, it does in a forcible way reveal the prominent idea, and is worth remembering by those wishing to test the theory."

After citing very many interesting cases among his acquaintances and in the families of his friends and among their cattle, swine, and sheep—the necessary limits of a paper like this preclude the possibility of my giving them here—he formulates the following conclusions:

1. Robust and lusty wives more frequently have male than female children, particularly when their husbands are of medium or inferior vigor, and, reversely,

2. Delicate, weak women, who indicate from their appearance but little sexual ardor, more frequently have female children, especially when their husbands show indications of great sexual vigor.

3. Women who have these characteristics in a medium degree, which may fairly represent the great majority of wives, and whose husbands are also of fair average vigor, if they continue having children regularly about every two years, will have more girls than boys.

4. Wives who have been brought up religiously, and when young girls become devoted church members, have usually a larger proportion of girls than boys. This has been as yet mainly noted in village communities.

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* *Laws of Generation and Sexuality*, p. 15.

† James Law, F. R. C. V. S. *Report on Diseases of Horses*, p. 148, 1890.

‡ *Reference Hand-book of the Medical Sciences.*

5. The wives of farming populations have more boys than girls, and, reversely,

6. The wives of a city, town, or sometimes even a village population, give birth to more girls than boys.

7. Illegitimate children born throughout the country are in very large proportion boys—as much, or more than, three to one.

8. Illegitimate children born in cities, though oftener boys than girls, are not so to near the extent they are in the country.

Let us now see what objections there are to Mr. Terry's theory. He says that "it is natural to suppose that a woman weak in her maternal organism is weak in all her bodily organs. But this is by no means always so, not even so frequently so as to form the rule." It is an almost universal law of Nature, applying alike to the human race and to animals and plants—it is indeed a rule in mechanics—that a structure is no stronger than its weakest part. Right here he makes his first great mistake—one that vitiates his law as to the generation of sex and its control. It consists in his treating sexual excitement as the synonym of sexual vigor, whereas every physician knows that we have neurotic types of individuals, who may be thrown into the excitement of the cataleptic or the hysterical state on an almost inappreciable amount of provocation. This most certainly would not be regarded by any physician as an evidence of strength, but of weakness. Who does not know that excitement, instead of being a sign of strength and vigor, is the constant expression of weakness, the symptom of physical exhaustion, and frequently it is the synonym of impotence? Mr. Terry should have consulted more physicians before formulating his hypothesis; he would then have learned that there are many women of the phlegmatic temperament, strong, robust, and able to beget a healthy son every time, and yet who hardly know what ardor, excitement, or desire is, who never enjoy the sexual embrace, and who have a distaste for it. He should know that what is requisite is not excitement, but stamina, vigor, and power to bring a healthy ovum to maturity. Indeed, although contrary to many of his expressions, he seems to believe the same thing himself, for he tells us on page 89 that, when we desire male children and when the woman is deficient, we should adopt measures, not to increase her excitability, but to increase her health and strength, and incidentally thereby her sexual vigor. He goes on to say: "Weak lungs or a weak stomach are often found coupled with a large degree of muscular strength and health in the rest of the body." This may be granted within certain limits; we may have a large degree of strength and health, but not the "pristine, vigorous vitality," not the degree that the same person would have were she not affected with a weak lung or stomach. Furthermore, the fact that such women occasionally beget male children does not carry conviction, for it is the exception only that proves the rule. It is only an indication of what they might accomplish under proper and more favorable circumstances. In fact, Mr. Terry admits this when he adds: "Still, as the disease of the lungs progresses, we should expect to find a gradual decline of vigor and strength in every other organ in the body." He proceeds to say: "On the other hand, the wife may have a strong bodily frame, good lungs, good digestion, and yet an inherited debility, if nothing more, of the maternal organs that inclines to the conception of girls rather than boys." Thus he virtually admits that *sexual excitement* alone is not enough to determine the sex.

Even Shakespeare, that great delineator of human actions and reader of human impulse and passion, recognizes the difference between desire and excitement on the one hand and vigorous performance on the other. For in speaking of liquor he says: "It increases the desire but takes away the performance." I may mention as a further proof of the correctness of my objection to the use of the word "excitement" as a controlling factor in generation, the fact that some fishes that lay their eggs and trust to the milt or seed of the male which floats about on the water, coming in contact with them days after it is secreted by the male, and when any excitement attending its emission will have had ample time to cool down or pass away, and here we find male and female.

Moreover, the *Aphis* can propagate a whole season (sixteen generations) without contact with the male, and among many species of insects the male and female unite very irregularly and their ova develop into adult males and females. In like manner the queen bee can lay ova which will develop without ever meeting the drone.* I am supported in my objections to Mr. Terry's using the word excitement as the corner-stone of his edifice by an article from the pen of Dr. E. A. Cobleigh,† and another from that of Dr. Charles Ambroke.‡ The former instances two cases of boys born in his practice to women who experienced no excitement whatever, but, on the contrary, had a distaste for the sexual act. The latter cites his experience in his own family as proof that want of excitement on the part of the female is no bar to begetting male children. Dr. Cobleigh mentions a theory communicated to him by a minister and a lawyer of his acquaintance who thought they had solved the problem. They claimed that all depended on the position of the woman after coitus; if she lay on the right side, a boy was sure to result; if on the left, a girl. A patient of mine had a somewhat similar belief, only it applied to the husband; if he lay on his wife's right side after coitus, it would be a boy, etc.

Mr. Tidy# states that the differentiation of the sexual organs does not begin until a certain period after conception; what then becomes of the *excitement*, if any existed? I could produce much more proof if it were needed, but think enough has already been offered to convince the most skeptical that Mr. Terry does himself and his theory an injustice by using the word "excitement" as the *sine qua non* of its existence.

Dr. H. M. Gourier's Theory.—Let us now pass to the consideration of Dr. Gourier's theory. It may be stated as follows: "When there is, at the moment of conception,

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* Dr. Albert C. Beale, *Record*, April 17, 1886; Seibold and Herman, in Herman's *Handbook*, vol. vi, part 2, p. 161.

† *Medical Record*, Jan. 30, 1886.

‡ *Ibid.*, Jan. 16, 1886, p. 81.

Legal Medicine, 280 and 281.

a perfect equilibrium in the forces and vital resources of the male and female, the sex is determined by the existing need for the replacement of the branch which in general possesses the least vitality, and the sex is that of the weaker one."[*] On page 26 he says: "Therefore in generation the sex is naturally determined by the subject whose individuality there is most need of preserving. It is this one who furnishes the necessary elements for the continuation of the work of Nature, this one that determines the sex." Again, on page 40, he says: "A vigorous woman produces boys when at the time of copulation her vigor or vitality exceeds that of her husband; then it is he that is replaced. This is the law of the feeblest; an equilibrium is maintained by following this law."

He gives (page 39) as a cause for the predomination of male births that during the first part of her monthly periods the woman is suffering from pain and debility; and during the second the flow becomes painless and her strength returns. This second part is longer, and is particularly the time of reaction and ovulation. The excess of male births is partially due to the fact that sexual congress, interrupted temporarily during the first part, is more frequently resumed near its end, when the wife has regained her strength. I may here *en passant* say that the first impregnation may influence many ova, or even the entire ovary, so that types of subsequent offspring may feel the influence of an anterior sexual meeting in man and animals, the embryo thus in its turn exerting a wonderful influence on the mother.[†] My friend Dr. Harry Lukes, M. R. C. V. S. London, relates an interesting case in his own experience illustrating this point, which I omit for want of space, and the fact that in fowls one service answers for several days and several eggs is another. Furthermore, stock-breeders know that if a pure-bred female is once mated with a male of other breed, or mongrel, she can never thereafter be depended upon to breed true. Dr. Gourier makes two propositions on which the foundation of his theory stands. "Nature invariably pursues the two following ends: Firstly, the conservation of the subject; secondly, the propagation of the species."

It is while in a state of desire and suffering, and during convalescence from disease, and during the first part of her menstruation, that a woman is most likely to conceive and replace herself by a child of her own sex (page 44). He accounts for the preponderance of male births after wars by their enfeebling effects on the man. I think it quite as likely due to the long rest the women have enjoyed, together with the absence of so many men; their minds must have dwelt more than usual on the male sex, since we are told that "absence makes the heart grow fonder."

It will be observed that both Mr. Terry and Dr. Gourier reach the same results—namely, that robust women bring forth more male children than feeble ones, and that robust men beget more female than male children. The former believes, however, that each sex impresses the sex opposite to its own on its offspring, while the latter believes that each sex impresses its own sex and attributes on its offspring. In Dr. Gourier's theory we have not the strong prevailing over the weak, but the anomaly of the weak prevailing over the strong. I think common sense and everyday experience must convince any one of the error of this theory. Regarding the statements which I may call the foundation on which rests the entire fabric—that "Nature invariably pursues the two following ends: (1) the conservation of the subject; (2) the propagation of the species"—she may pursue them, but she frequently fails to attain her end; for does she not often suffer whole families of men and animals to become extinct, thus both failing to conserve the subject and to propagate the species—yes, and whole nations and races—as witness the American Indian, many families, tribes, and nations of whom have already joined the silent majority and, it is to be hoped, passed to the happy hunting grounds?

And how many powerful tribes and nations that once peopled parts of Asia have either been absorbed or destroyed! Where are the mound-builders who once peopled the great central plateau of the United States? Where, I ask, are the saurian reptiles, the mammoth, and other representatives of the departed glory of animal life? Suffice it to say that *Nature does not always conserve the subject and propagate the species.* Moreover, it is contrary to reason to believe that the weak prevails over the strong. My own observations in three hundred and eleven cases are in general accord with these views, and are opposed to Gourier's theory. Indeed, the law of the survival of the fittest applies to all things in Nature, plants as well as animals. The statement that a weakly, dying woman could prevail as against a strong, robust, healthy, and vigorous man—why, the very statement is an absurdity.

THE WRITER'S HYPOTHESIS.—We now come to the consideration of the theory that impresses me as bearing more nearly the stamp of correctness and of being the true law for controlling sex. It consists simply in adopting Terry's in its entirety, minus the term "*highest degree of sexual excitement*," and substituting "highest degree of sexual and general bodily and mental vigor." It may be asked why the parents impress on their progeny, not their own, but the opposite sex. Mr. Terry has offered no adequate explanation of this; he only gives experiments apparently proving the fact, but not the reason for it. I would offer as a reason the following: During all relations of persons and animals of different sexes, I think it can not be gainsaid that the thoughts are much more frequently centered on the opposite than on the one to which the thinker belongs. This is in an especial manner true during the sexual embrace; the thoughts, affections, and aspirations of the male are centered on the female—and *vice versa;* she is the picture occupying his mind's eye; for the time being, at least, he forgets that there is a single male other than himself in existence. If his vigor is superior to hers, the spermatozooid is emitted and goes in search of the ovum, charged with the picture occupying his mind when it was being elaborated, and hence, since the impulse and will of a person is strong in proportion to the bodily strength, he prevails over the idea filling the mind of the female at the time and transmitted to the ovum, and a female is conceived. This I say notwithstanding the teaching of physiologists that when the spermatozoon penetrates the wall of the ovum, they both die and a new cell is formed, for prior to death the sperm transmits the impulse —as an electric current is transmitted to a motor, giving it a potentiality for work—to the new cell, and the result is the same as if it did not die.

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[*] *Laws of Generation and Sexuality*, p. 27, chap. iii.

[†] Dr. Pierce, Dr. F. H. Osgood, F. M. C. V. S.

This belief does not require such a great stretch of the imagination when we reflect that maternal impressions are believed by nearly or quite half of the medical profession to be powerful enough to indelibly mark the fœtus *in utero* for life, even to the extent of causing amputations and other deformities, many instances of which are given in books on legal medicine, obstetrics, and on diseases of the nervous system. Having presented my theory and explained it to the best of my ability, considering the necessary limits of an article like this, let us now see what support it gets from actual observations on the genus homo. I made notes of three hundred and eleven cases of births taking place in my own practice, and studying them from various points of view, not with any desire to support a preconceived theory, but to ascertain if any theory could be founded upon them. I desired particularly to settle, so far as such a limited number of cases could settle anything, the following questions, namely: Whether Terry's, Gourier's, or my own theories were correct; also that enunciated by Dr. W. H. Cook; and incidentally the elucidation of any other theories from time to time advanced; as well as any other points that could be cleared up. I first noted the apparent vigor of the patients, having regard to any circumstances likely to affect my judgment. This was done before the delivery when possible, and that was in the vast majority of the cases, and the sex of the child predicted. If it were not possible in any case to do this before delivery, which was very exceptional, the facts were noted afterward, for I realized that figures can be made to prove any settled ideas, since we see them through colored and partial spectacles. I divided the cases into three classes.

First Class.—Containing 126 cases where the vigor of parents was marked equal.

Second Class.—Containing 117 cases where the husband was more vigorous than the wife.

Third Class.—Containing 68 cases where the wife was more vigorous than the husband.

Of the 126 cases in the first class, I found 62, or 49·2 per cent., were males, and 64, or 50·7 per cent., females. It will be observed that the sexes were nearly equally divided.

Of the second class, there were 117 cases; 30, or 25·6 per cent., males, and 87, or 74·35 per cent., females. Of the third class, where the vigor of the mother was noted as in excess, 68 children were born, of whom 63, or 92·64 per cent., were males, and 5, or 7·35 per cent., females. Here again we have the theory vindicated by an overwhelming majority, as our politicians would say.

I may be asked how we are to explain or account for the minority in failing to beget children in accordance with the rule governing the class to which they belong. I may reply, in the language of Dr. Gourier, "that vigor does not always belong to large bodies, large appetite, and large accumulations of fat, but in vitality" and vigor, or the power to bear pain and resist decay and death; hence it is that this is one element of doubt and uncertainty in our prognosis. Again, there can be no question but that there is much in the Hoffacker theory,* that, in the absence of other controlling factors, the relative ages of the parents undoubtedly affect their progeny, as before explained, and when the difference in the vigor is slight it may act as a controlling element and upset our confident prediction. For instance, the immaturity of a woman, otherwise robust as compared with her husband, would be offset by his maturity. Another cause of exceptions to our prognosis is the continued and frequent pregnancies and consequent lactation, or the performing two functions at the same time, and although many women seem to continue fat while so doing, they are really in a condition of enervation and much below their pristine vigor. On the part of men we have large consumers of malt liquors, who, though sleek and fat, are much below normal in muscular tissue and muscular vigor. Another element introducing doubt is the undoubted tendency of Nature to produce an equal division of the sexes and thereby "propagate and conserve the species," which is evident if the parents are approximately equally matched. Stock-breeders recognize this,† and take advantage of the knowledge in breeding; for instance, if a mare foals a filly and it is desired to have a filly again, they do not put her to the stallion at her first heat, but omit one and then have her covered at her next subsequent heat, when they accomplish their object. I am assured that this is a rule having *very* few exceptions. Other elements introducing doubt and making exceptional cases are temperament, type, complexion—a female of dark complexion prevailing over a male of light; and as applying to *men*, business cares, vexations, and disappointments—in short, any powerful impression, as success, joy, grief, failure. I could cite an interesting case of a lawyer—a patient and friend—each of whose five children I was able to account for on the above hypothesis, as well as many other interesting facts; but the field is so rich in material that I have already written at more length than I had intended, and so must hasten to a conclusion. The theory proposed by Dr. W. H. Cook,‡ although having little to recommend it *a priori*, I deemed worthy of test, especially as I had the figures at my disposal. He thought that the female is more responsive just after retiring at night, and that coitus at that time, say before midnight, would most likely insure male offspring; whereas if it took place in the early morning—after midnight, say about four o'clock—the woman not being so responsive, a female would result. Of course these statements would imply that coitus and conception were synchronous as to time, which all medical men know is not the case; still it would be fair to assume that, giving a fixed time for coitus in several hundred couples, and admitting that a certain time between the act and the resulting conceptions must elapse, this period of delay would average very nearly the same in a majority of the cases, and hence the results would be the same so far as the results on the ovum and the sex of the offspring is concerned, as though the coitus and conception were identical as to time. In order to prove the idea correct, of course, the sex of children born in the last half of the day, or before 12 P. M., must have a large preponderance of *males*, and those born after midnight a large majority of females. I divided the births into three classes: In the first class I put all children born in the day, 6 A. M. to 6 P. M.; in the second class all born from 12 P. M. to 12 M.; in the third class all born from 6 P. M. to 6 A. M. Of those born in daylight—first class—there were 128 children, divided as follows: 70, or 54·69 per cent., were females, and 58, or 45·31 per cent., were males. In the second class there were 129 children, 58, or 44·96 per cent., of which were females, and 71, or 55·04 per cent., were males. The second class, which is the one really testing Dr. Cook's theory, instead of proving its correctness, proves its falsity. For, instead of having the female births greatly outnumber the males, as they ought to do, the male outnumber the female by more than 10 per cent. A few more curious theories have been proposed, but since we have dealt with most of the interesting ones it now remains to conclude by proposing a rule for controlling the sex in man and animals.

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* Herman's *Handbook*, and *Ref. Handbook of the Medical Sciences*, p. 437.

† F. K. Felch, Natick, Mass.

‡ *Record*, January, 1886, p. 52.

RULE FOR CONTROLLING THE SEX.—When a given couple are having an excess of girls, and it is desired to have boys, they must refrain from all sexual intercourse, the female must wean her child, and live almost continuously out of doors, having gentle exercise, but not carried to the point of fatigue. She must be relieved of all, or nearly all, of her household cares, have a good, rich diet of milk, rare-done meat, wine, fruit in moderation, amusements, and everything calculated to promote cheerful and happy thoughts. Her husband must have a more sparse diet and hard work. When male children are in excess, this treatment, except the paragraph referring to lactation, may be applied to the husband. Referring to animals, I would apply the rule in the same manner, and in addition would allow the male, if the stronger, to have connection with other animals while the female out of which it is desired to breed a male is resting.[*]

The American Association of Genito-urinary Surgeons.—At the recent annual meeting officers for the ensuing year were elected as follows: Dr. E. R. Palmer, of Louisville, president; Dr. L. Bolton Bangs, of New York, vice-president; Dr. J. A. Fordyce, of New York, secretary; Dr. J. P. Bryson, of St. Louis, member of the council; and Dr. R. W. Taylor, of New York, delegate to the Congress of American Physicians and Surgeons.

The Medical School of Yale University.—The annual address, on The Ætiology of the Infectious Diseases, and the Explanation of Acquired Immunity from these Diseases, was given on June 28th, by Dr. George M. Sternberg, of the army.

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MOUNTAIN SICKNESS.

THE recent book on mountaineering by Mr. Edward Whymper has revived interest in this malady. He visited the great Andes of the Equator chiefly to indulge his spirit of adventure and write a book, but hardly less was he actuated by a desire to contribute some assured facts concerning the malady of great altitudes. His objects, as stated by himself, were to learn from personal observations whether human life could be sustained at great heights above the level of the sea in such a manner as would permit of the accomplishment of useful work. The testimony regarding mountain sickness has come from many parts of the world, and has been accumulating in detached morsels during several centuries. Although this evidence is not very full and differs in details, it agrees as to the general leading features—nausea and vomiting, headaches of a very severe character, elevation of temperature, lassitude, hæmorrhages, depression, and debility. To this collection of symptoms the term "mountain sickness" is now commonly applied.

This traveler's experience in Ecuador was extensive enough in the number of ascents made, but not very positive in the matter of attacks of the sickness. He made as many as twelve ascents, inclusive of two on Chimborazo. He and his companions, two Swiss guides, had only one attack of the malady. One other companion was exempt, while three were ill. No seizure was experienced under 16,000 feet of elevation; and on the occasion of the single attack every care was taken to exclude the elements of fatigue and exposure during that ascent. Later ascents, made to much higher points and no more carefully planned to shut out exhausting causes, did not result in other like attacks. It was during their first ascent of Chimborazo that the sickness was felt, and the second climb on the same peak, a few months later, found the party almost wholly insusceptible, so that positive indications as to the causation of mountain sickness are as remote as they were before these ascents were undertaken. The key of the mountains' secret was not surrendered to this bold son of Adam, although he was fully equipped with the best of instruments, and he is himself without doubt the first of living mountain-climbers. One point seems to be established by these ascensions of Mr. Whymper—namely, that the mountain peaks of equatorial South America offer the minimum amount of disturbing features to mountaineers who are susceptible to the sickness. The personal equation may modify even this statement. We can not disregard the thought that the former mountaineering experiences of this skilled climber and his expert guides may have shielded him and them from influences to which many others would have yielded.

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[*] I have a very interesting letter from J. K. Felch, of Natick, Mass., the extensive breeder of fancy poultry and colley dogs; but for lack of space I could utilize some of the points it contained.

The influence of local causes, such as some emanation of the soil or some condition of the upland vegetation, can hardly be accepted as predominant, for the second trip of these explorers up Chimborazo contributed no second illness. Mere rarity of the atmosphere seems an inadequate cause, since there have been ascents in the balloon made to greater heights above the ocean than the tops of our highest mountains without begetting any marked disturbance. And some travelers have been subject to the trouble at comparatively low levels, and have apparently risen above it by persisting in their upward march after a suitable period of rest.

Like seasickness, which remains to this day of dubious and perhaps various ætiology, mountain sickness challenges elucidation by men of science. The mystery of it we can not expect to see dispelled by even such energetic men as Mr. Whymper, who are doing their utmost if they visit some ice-capped peaks and at once come away, driven off by storms that perhaps forbid the explorers even to unpack their implements, and if, also, under more favorable skies they are permitted to remain, as these hardy explorers were, for two or more days at a time upon icy mountains' tops. Even though they accomplish all this, yet is their scientific strength weakness, their provender is too soon cut short, and they themselves are glad to get away with their lives. The study of ætiology, to be successful, needs more peaceful surroundings than these.

Mr. Whymper casually notes the absence of desire for tobacco during his attack of the sickness. He and one of the Carrels were confirmed users of tobacco, and had become slaves to it to such an extent that they smoked upon every opportunity. When such persons put away their beloved pipes there is certainly something wrong. On Chimborazo, at 16,000 feet elevation, they found smoking laborious rather than distasteful, and ceased their efforts with chagrin, chiefly because they could breathe only with the mouth wide open. The labor of breathing was so extreme that they could not partake of food, they could only take drink in sips, and talking was avoided as a waste of lung-power.

MINOR PARAGRAPHS.

A TUBERCULOUS FISTULA TREATED WITH LACTIC ACID.

The *Wiener medizinische Presse* quotes Zippel as favoring the use of this acid in chronic tuberculous fistulæ. A protracted course of treatment will probably be required by means of medicated bougies. He has employed a mixture of equal parts of gelatin, lactic acid, and water, with one part in five of menthol added after the mixture has been thoroughly stirred and gently heated. The mass is then poured into molds, which should, for one day at least, be kept in an ice-box. The bougies are exsiccated by the use of calcium chloride. After a week or more they are coated with collodion. If the latter coating is objectionable, the cylinders may be kept for a time in oil or benzene to which thirty per cent. of menthol has been added. The menthol has an analgesic effect. If gelatin forms a bougie that is too soft and yielding, a mixture of starch and tragacanth may be substituted. Before being used, one end is shaped by pressure or cut to a cone-shape, and they are then ready for introduction.

PEPSIN FOR ŒSOPHAGEAL OBSTRUCTION.

The *Medical Standard* contains the report of an ingenious treatment of obstruction of the œsophagus, by Dr. Richard Whitehead, of Chapel Hill, N. C. A negro child of nine years swallowed a large piece of hard beef, with cartilage adherent, which became impacted in the œsophagus. Attempts were made to dislodge the foreign body with instruments, with the result of fixing it very tightly in the gullet, a few inches above the cardiac orifice of the stomach. For six days the child had an impermeable œsophagus. Neither food nor water could pass into the stomach. Dr. Whitehead formed the opinion that, if further force was employed in trying to push an instrument through the obstruction, the gullet would probably be torn through. He therefore determined to try the solvent influence of an artificial gastric juice, and took for that purpose a syrup of pepsin with hydrochloric acid in physiological proportions. This was brought into contact with the foreign body. Within a few hours the obstructing substance was partly rejected by vomiting and partly carried down into the stomach. After that the patient had no further inconvenience.

THE CROTON WATER.

The water supply of New York seems to be in a muddled condition, judging from observation and common report. From an æsthetic standpoint, the unfiltered hydrant water is not attractive, and its bouquet, so to speak, does not inspire confidence. It is stated that chemical examination shows an increase of albuminoid ammonia, and that the microscope reveals the presence of vegetable matter. If this condition persists, we may expect an increase in the number of cases of enteric disease among the many who use unfiltered and unboiled water.

AN IMPORTANT DISTINCTION.

A midwife in Prussia was recently fined ten marks for usurping the style and title of accoucheuse (*Geburtshelferin*), and the *British Medical Journal* remarks: "That a mere midwife should attempt to pass herself off as an accoucheuse is, as Dogberry says, 'most tolerable and not to be endured'; it is an offense against society like that of Dr. Johnson, of whom Boswell's father spoke in terms of righteous indignation as 'ane that keepit a schule and ca'd it an academy.'"

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending June 28, 1892:

DISEASES.	Week ending June 21.		Week ending June 28.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	2	0	3	1
Typhoid fever	11	4	13	5
Scarlet fever	85	25	82	13
Cerebro-spinal meningitis	1	3	2	5
Measles	386	27	330	32
Diphtheria	86	25	62	26
Small-pox	17	3	6	2

The Barnes Medical College is the name of a new institution lately chartered for the teaching of medicine in St. Louis. Dr. C. H. Hughes, late professor of neurology, psychiatry, and electro-therapy in the Marion-Sims College of Medicine, of St. Louis, is president of the faculty. Dr. Pinckney French, late of the Marion-Sims, is secretary. The school will be open for the reception of students by the first Monday in October next. The building is centrally located on Beaumont and Chestnut Streets, of beautiful architectural design, four stories in height, and sixty by a hundred feet in area. The announcement may be found in our advertising pages.

The Lehigh Valley Medical Association will hold its twelfth annual meeting at Bethlehem, Pa., on Thursday, the 7th inst., under the presidency of Dr. J. N. Richards, of Fallsington.

The Chicago Medical College.—Dr. John Ridlon, recently of New York, has been appointed lecturer on orthopædic surgery.

The Appleton Prize, a prize consisting of $25 worth of medical publications, offered annually by the firm of D. Appleton & Co. to the candidate passing the best examination before the board of medical examiners of the State of North Carolina, was won this year by Dr. E. J. Buchanan, of Salisbury. According to the *North Carolina Medical Journal*, sixty-nine applicants for the license to practice were examined by the board, to forty-five of whom licenses were granted.

An Ancient Definition.—In an *English Expositor* which, the preface says, was begun by Dr. John Bulloker, is found the following: "Apoplexy. A Disease that suddenly deprives one of Sense or Motion. It cometh for the most Part of cold and grose Phlegmatic Humours, oppressing the Brain in such Sort, that the animal Spirits can not pass from thence into the Sinews, as they ought to do."

The late Dr. W. R. Birdsall.—At a meeting of the Lenox Medical and Surgical Society, held on June 20th, the following preamble and resolutions were adopted:

Whereas, This society has in the death of Dr. W. R. Birdsall sustained the loss of a most valued member; therefore be it

Resolved, That the society express the profound sense of bereavement which it has sustained, and that its sympathy and condolence be extended to the family of the deceased.

Resolved, That a copy of these resolutions be furnished the *New York Medical Journal* and the *Medical Record* for publication.

J. Lee Morrill, M. D.,
[Signed.] S. S. Jones, M. D.,
J. Blake White, M. D.

The Death of Dr. Herbert Fearn, of Brooklyn, has been reported. He was a native of England, but came early to New York. His degree in medicine was taken at the New York Medical College (the old Thirteenth Street school) in 1857. He was one of the first to make use of veratrum viride in heroic doses for the systematic treatment of puerperal convulsions. This treatment gained such considerable foothold in Brooklyn before it was accepted in other cities that it was not infrequently styled "the Brooklyn treatment" of that affection. Midwifery and microscopy were branches of study that especially attracted the deceased.

The Death of Dr. John A. Ray, of Brooklyn, on June 22d, terminated a protracted illness on account of which the deceased had been confined to his house and bed since April last. He was a graduate of the College of Physicians and Surgeons, of the class of 1874. He had resided in Brooklyn since 1878, and had been surgeon to the Eye and Ear Hospital of that city for the past ten years. He was thirty-nine years old at the time of his death.

The Death of Sir William Aitken occurred on June 27th. He was one of the best known of the medical officers of the English army, and for a number of years was professor of pathology in the Army Medical School at Netley. He was the author of a well-known and deservedly popular text-book on the theory and practice of medicine, and was a member of many British and Continental medical societies.

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from June 19 to June 25, 1892:*

Fisher, Henry C., First Lieutenant and Assistant Surgeon, Fort Yates, N. D., is granted leave of absence for twenty days.

Billings, John S., Major and Surgeon, is granted leave of absence for one month and fourteen days, with permission to go beyond sea.

Banister, William B., Captain and Assistant Surgeon, is granted leave of absence for one month, to take effect on or about July 1, 1892.

Society Meetings for the Coming Week:

Tuesday, *July 5th:* Medical Society of the County of Broome (quarterly), N. Y.; Union, N. J., County Medical Society (quarterly); Chittenden, Vt., County Medical Society.

Thursday, *July 7th:* Washington, Vt., County Medical Society; Lehigh Valley Medical Association (Bethlehem, Pa.).

Saturday, *July 9th:* Worcester, Mass., North District Medical Society.

Proceedings of Societies.

NEW YORK SURGICAL SOCIETY.

Meeting of March 9, 1892.

The President, Dr. Arpad G. Gerster, in the Chair.

Old Dislocation at the Elbow reduced by Operation.—The President presented a patient, nine years old, whose right forearm had been dislocated backward and outward in 1891. The diagnosis of fracture had been made and the limb been placed in a splint for six weeks. When the patient was first seen by the speaker the arm was considerably shortened and semiflexed, the internal condyle of the humerus, the olecranon, and the head of the radius projecting in the characteristic fashion. Flexion and extension were limited, and a dislocation, rather than fracture, was suspected. Reduction of the dislocation under anæsthesia having failed, an incision was made over the posterior aspect of the olecranon, exposing the joint and showing that the bones of the arm and forearm did not articulate, and that there were extensive and strong adhesions. The latter were divided, but reduction could not be accomplished, on account of an exostosis an inch and a half long, projecting from the internal epicondyle. The bony growth had occurred where the periosteum had been stripped off at the time of the accident. The exostosis was chiseled away; reduction then became easy and the arm was treated as usual. The functional result was not so complete as it would become in time, because motion at the elbow was still limited, but the range of normal mobility was visibly increasing, and good function could safely be predicted.

Dr. F. Lange asked whether the exostosis between the condyles did not correspond to the coronoid process.

Dr. L. A. Stimson asked whether the triceps was split, and whether there was any difficulty in reaching the exostosis. In his experience the lateral incision had best exposed the joint.

Dr. J. A. Wyeth had treated four cases of dislocation and fracture involving the elbow joint during the preceding eighteen months. He operated by a double lateral incision that increased the exposure of the antero-posterior surface of the joint. He had chiseled off the epicondyle where the coronoid process impinged, but had not observed free motion on recovery.

Dr. C. K. Briddon stated that in one case of injury in this region he had found an exostosis growing from the anterior olecranon fossa when he operated that he chiseled off. In this case motion had returned.

Dr. R. H. M. Dawbarn asked when passive motion had been begun.

The President replied that, as the joint surface of the humerus was unchanged, he had concluded there had been no fracture, but that there had been an outward and backward dislocation of the forearm, the capitulum of the radius resting free between the muscles. The coronoid process was unchanged, excepting that the brachialis was torn off. He would have chiseled off any exostosis there if it had been in the way. The impediment to motion seemed now to be on the dorsal or external side, and it was possibly caused by the adherent cicatrix. The triceps was divided longitudinally and there was no difficulty in exposing the humerus and the articular extremities of both bones of the forearm, and none in slipping the soft parts over the epicondyles. Passive motion had been regularly applied from the seventh day on, though the child resisted. The parents continued the movements, but not systematically; still, the arm was improving and he thought motion would increase, and this would be due to the active efforts of the patient rather than to any passive movements.

Syndactylism treated by Operation and Thiersch's Skin-grafting.—Dr. Lange presented a case of syndactylia in which the web extended almost to the nails. He had operated by taking enough skin from one finger to cover the other, and then applying a graft according to Thiersch's method over the denuded surface, covering with it the distal joint of the third finger that he had accidentally opened. He had operated two weeks before and the skin had united beautifully. He had placed two skin grafts and made his incision farther backward on the hand, to obviate the contraction that usually recurred at that site. He had left a little more tissue on the side of the index finger than should be there, but he thought it would contract in time.

Dr. Robert Abbe said that he had failed to get a good result in the cases in which he had operated, and he thought this operation would give a result of permanent value.

Neuralgia of the Fifth Nerve relieved by Dividing and Twisting.—Dr. Wyeth presented a patient, aged fifty-one, who had come under his care in 1891 for trifacial neuralgia, the pain being most severe in the inferior dental branch of the fifth nerve, with which he had suffered for five years. Extraction of the teeth had not relieved the pain. The speaker had operated in July, exposing all three branches of the trifacial, which he had cut and then twisted in order to destroy the conductivity of the fibers. This seemed better than opening the skull and dividing the Gasserian ganglion. The patient was relieved at once and there had been no recurrence of pain. Of course there was loss of sensation. In another case that he had treated, in which the third division of the nerve had been resected unsuccessfully, he had cut all the divisions of the nerve and twisted them, and the patient had remained free from pain.

Dr. Lange had operated in a case of severe neuralgia of the third branch of the fifth nerve, in which epileptic convulsions were caused by the pain. He operated by Krönlein's method, seizing the nerve below the foramen with Thiersch's forceps and twisting it slowly until it ruptured. The two main branches of this nerve, the lingual and the inferior dental, were separated and a section of nerve tissue, from an inch and a half to an inch and three quarters in length, was removed, while four or five inches of the muscular branches were excised. The otic ganglion was not found. The operation was very tedious and bloody, the venous oozing being controlled with difficulty. The patient made a good recovery and had remained free from the fits for three months after the operation.

Dr. Dawbarn stated that he had demonstrated Rose's operation to his classes last autumn, because it seemed from the description so easy. But six cadaveric experiments had satisfied him of its great difficulty and danger. He would consider a revolver-shot into his skull as hardly more dangerous than this operation, which penetrated almost half-way through the head, and within a hair's breadth of the sinus and the deep carotid. The motor portion of the fifth nerve was, of course, first exposed and endangered, underlying, as it did, the Gasserian ganglion. Indeed, he strongly doubted if in the living subject it would ever be possible to be at all sure, at this extreme depth, as to just what tissue was being excised, or to do thorough work safely. Approach to the ganglion by trephining at the side of the skull was, he thought, easier and safer.

External Œsophagotomy in the Operative Treatment of Cicatricial Stricture of the Œsophagus.—Dr. Willy Meyer read a paper on this subject. (To be published.)

Dr. Stimson referred to the cases in which the late Dr. Sands had operated by an incision in the neck, cutting the stricture with a long, narrow-bladed knife, and the subsequent passage of œsophageal bougies. If more time had been given in the present case, or a smaller incision, sufficient to pass a 20 or 25 French bougie, made, the result might have been different.

Dr. Wyeth believed in early gastrostomy in these cases, as the nutrition could then be attended to and the diseased and narrowed œsophagus was given a rest. After two or three weeks of rest thus obtained he had been able to pass sounds that he had not been able to pass before.

Dr. Abbe thought the plan Dr. Meyer advocated was a proper surgical procedure, analogous to the perineal incision to relieve the urinary tract; so would gastrotomy relieve the œsophagus.

Dr. Lange asked if Dr. Sands's cases had been cases of internal œsophagotomy without incision in the neck. He knew that he had used a bulbous instrument, having a concealed knife, that possessed the advantage of detecting the locality of the stricture by means of the bulb. In the present case the incision seemed rather deep, going through the entire wall of the œsophagus. All such cases were very dangerous, and in the only case in which he had found incision necessary, in spite of numerous attempts to incise under anæsthesia, he had had to perform gastrotomy and cut the stricture, but not deeply, and pass a drainage-tube into the œsophagus, just sufficiently large to spread the incision and allow the free discharge of the secretions. The tube remained *in situ* for thirty-six hours, when it was removed and the patient allowed to swallow frequently small quantities of water so as to keep the wounded surfaces clean. In the after-treatment he had passed the bougies at intervals of from a week to two weeks; and from the time the child swallowed solid food the stricture had become wider, the food masses dilating the caliber to 40 French, and any food mass that was thoroughly masticated would pass through that caliber. Now, in passing a bulbous bougie a number of constricting bands could be felt, and eventually these might develop into constrictions that would have to be incised by Sands's instrument. As he remembered, in one of Dr. Sands's cases no bougie had been used, and the case had been presented twice, at a year's interval, no instrument being passed *ad interim*, as the swallowed food acted as a dilator.

Dr. Dawbarn said that if plugs were introduced into the œsophagus from above and below, to avoid the inevitable infection of the wound, such plugs would have to be very firm to resist the violent impact from vomiting; and, if so firm, would be apt to cause sloughing. In cases where this operation seemed to be indicated he would advise, instead, exclusive rectal feeding for a few days, until granulation had begun, and infection would thus be avoided. He could see no excuse for stomach-feeding from the first, as it invited infection of the œsophageal wound. Maintenance of nutrition by the rectum through proper technique for a week or so was an easy matter.

The President said that in a case of cicatricial stenosis of the œsophagus he had performed a gastrotomy and retrograde dilatation of the œsophagus. The bougie entered the stricture from below, and a larger bougie was passed day by day until the stricture was sufficiently dilated, when the gastrotomy wound healed spontaneously. Three weeks after the gastrotomy, fever and chills began, with subsequent pyæmic abscesses on the back and buttocks. This case repeated Dr. Meyer's experience. Like the urethra, the œsophagus offered frequent opportunity for systemic infection; many urethrotomies were performed without antiseptic measures or subsequent pyæmia, and yet the reverse occurred, and he would endeavor, by preliminary gastrotomy and irrigation of the œsophagus, to prevent infection of the œsophageal wound.

Dr. Meyer said that he would have liked to allow more time before performing internal œsophagotomy, but, having tried during eight weeks to divulse the long, tubulous, lower stricture, with recontraction following his efforts each time, it had seemed that something more was indicated. To render internal œsophagotomy less dangerous, he would in future cases of a single long stricture in the lower portion of the œsophagus first perform a gastrotomy, then retrograde dilatation, and then, if the dilating tubes would not pass, from above perform an internal œsophagotomy, after having first added external œsophagotomy at the usual spot. In this case he had had to do the latter operation first on account of the upper stricture. In first rendering the operating field aseptic by the method proposed in his paper, internal œsophagotomy with subsequent instrumental dilatation would most probably prove to be of the same value in such cases as internal urethrotomy did in stricture of the anterior urethra. If an antiseptic field could be obtained, the easy passage of a large tube after internal œsophagotomy in this case showed the advantage of the latter. So far as the danger Dr. Dawbarn had spoken of was concerned, he would place a sponge on a thread saturated with a ten-per-cent. solution of iodoform in ether in the œsophagus, and then feed the patient by the gastric fistula. Such a soft plug could not cause sloughing; it need not be retained more than three days.

Ligation of the Carotid and Subclavian Arteries for Innominate Aneurysm.—Dr. Abbe presented a specimen from a case in which he had operated two weeks previously. The patient was a boatman, aged forty-four, who had for two years and a half had a pulsating tumor of the right side of the chest, with occasional pain and numbness in the right arm, progressive hoarseness, and paralysis of the right vocal cord for a few weeks before his admission into the hospital. An examination showed a pyriform aneurysmal dilatation at the root of the neck, as if it arose from the innominate or the arch of the aorta, and auscultation revealed a bruit. Dr. Bull, Dr. Murray, and Dr. Curtis had agreed at a consultation that it was an aneurysm of the innominate. A few weeks of rest and the internal administration of iodide of potassium relieved the dyspnœa and the graver symptoms, but the aphonia increased. Ligation was advised, and the carotid was tied above the omohyoid, and the subclavian in its third portion. Twisted silk ligatures were used and the specimen showed how well they had been buried in the plastic exudate. On the sixth day after the operation high temperature and pericarditis set in, and the patient died two days later. The specimen showed an extreme atheromatous condition of the aorta and a symmetrical dilatation of its wall without a distinct aneurysm. In ligating, the speaker had felt the crushing of the internal wall of the carotid, but not of the subclavian, though recent experiments had shown that rupture of the walls of an artery in ligation was unnecessary to insure occlusion. A silk ligature was perfectly safe if it was aseptic.

Dr. Dawbarn thought that one case should not decide the advantage of silk. Senn's experiments, published in his *Experimental Surgery*, showed that silk disintegrated the wall of the vessel, while chromicized catgut did not; so, if these experiments were correct, and they had elsewhere been corroborated, the latter material was preferable. However simple the upper operation for ligating the third portion of the subclavian was, in most cases, more than twenty recent dissections directed to this point in surgery had proved to him that tying through an incision below the clavicle running along its middle third, and dividing the pectoralis major, was both safer and very noticeably easier. But it was as important in this technique to have the arm pulled well up, in order to give added space, as the opposite position of the arm was essential in the ordinary method. The wound was first deepened at its outer end, exposing the brachial plexus not yet opened out into a leash. At the inner border of this close bundle of nerves the artery was found.

Dr. Wyeth did not think that silk ligatures could be rendered as aseptic as other material; arteriitis was produced by the coaptation of the inner walls of the vessels, and not by the tightness of the ligature, and, consequently, silk was not so good as catgut.

Dr. Stimson said it had long ago been demonstrated that there was a complete absorption of all the arterial coats after the use of catgut as well as after that of silk.

The President thought catgut deserved the preference because it was more easily absorbed, and he had never observed hæmorrhage after using it. He pointed out the advantage of a double ligature and intermediate division of the artery to secure retraction and permanent interruption of the lumen.

Dr. Abbe had lost confidence in catgut; small silk was absolutely safe, and large catgut was not. In this specimen the silk could only be found by a microscopic examination. In the case here reported it had been easier to tie the subclavian than the carotid, and the operation had been almost bloodless.

Miscellany.

Is there any Remedy to Prevent and Destroy the Craving for Liquor?—Dr. E. Alexander, of El Paso, Texas, sends us the following:

Mrs. Riley.—"Phat is that bichloride av goold Oi hear so much about, Mrs. Foley?"

Mrs. Foley.—"Oi'm not poshitive, Mrs. Riley, but Oi t'ink it's a new kind of drink th' Foor hundred do be after takin'."—*Judge.*

In the *North American Review* for September, 1891, Dr. William A. Hammond and other celebrated physicians have very thoroughly argued the subject in question.

Dr. Hammond says: It may be stated, with perfect confidence in the absolute correctness of the assertion, that there is no medicine or combination of medicines that will cure a person of the habit of drunkenness—that is, that will destroy his or her habit or appetite for alcoholic liquors.

During our late war a great authority in the medical department of the United States army prohibited officially the use of calomel and antimony, no doubt with perfect confidence in the absolute correctness of his opinion. Contrary to and notwithstanding this opinion, very few scientific and practical physicians would voluntarily desire to be deprived of these great and valuable medicines.

According to the researches of Radziejewski, Shiff, Rutherford, Vigual, and Brunton, mercury is undoubtedly a specific in many diseases.

During the past year not only have physicians and scientific men of all classes, political parties, and churches thoroughly discussed the use and abuse of alcohol, but the people in general have taken great interest in the topic, and humanity is fervently and anxiously praying for a remedy that will accomplish a cure of the craving for liquor. Magnanimously, for hundreds of years, the medical profession has worked with all its might to find ways and means to prevent disease; and preventive medicine has accomplished wonders.

The dawn of a new era in medical science is just at hand. Great studies and researches have been going on in the science of bacteriology, a great deal of very important and exact knowledge of the minute forms of life has been proved, and we are forcibly reminded of one of the immortal Shakespeare's exclamations in the play of Hamlet: "There are more things in heaven and earth, Horatio, than are dreamed of in our philosophy."

Keeley maintains that bichloride of gold will cure drunkenness, but chemists and scientists have practically shown that gold will combine with one, with three, but never with two equivalents of chlorine; consequently bichloride of gold has no existence.

In the United States Pharmacopœia of 1880, auri chloridum, chloride of gold, is not officially recognized.

A combination of atropine, cocaine, and strychnine, or some such drugs, used hypodermically, will for the time prevent the appetite for liquor. This treatment has been recommended and adopted of late years, especially abroad.

In the *Deutsche medicinische Wochenschrift* we find the following: Strychnine in Dipsomania (Jergoleki).—Solution strychnine nitrate, 0·06 gramme (1 grain); distilled water, 15 grammes (f ℥ ss.). For subcutaneous injection: Daily, one to two injections; using at first 0·5 gramme (8 minims), later on 0·25 gramme (4 minims). According to the author, ten to sixteen injections suffice for a cure. Sodium bromide may be administered at the same time.

In an interview with a reporter in the Southern Hotel, St. Louis, some time in December, according to the St. Louis *Globe-Democrat*, Keeley said: "Injections are given three times a day, in additional (a teaspoonful every two hours). At the end of two days all taste for drink has departed, and the man will never drink again."

Readers of the *North American Review* will remember the grand, eloquent, and flowery description of Keeley's treatment and cure by a graduate of the institution. Alas! within a short time this very unfortunate, gifted, eloquent, and, in his opinion, safely cured individual was found dead drunk in the streets of New York, and died in a public hospital of delirium tremens. What an irony! The press very frequently reports similar cases of late, and some of Keeley's patients have become lunatics.

Another graduate of Keeley's institution states in the *Globe-Democrat:* "Four times each day the injection is repeated, and every two hours a varying range of bitter tonics is taken internally, composed of well-known vegetable properties. That they are powerful I can affirm from their results, and the man who takes No. 3 or No. 5 will feel his head whirl as if he had drank absinthe."

This corresponds exactly with what the medical profession say about Keeley's medicines and proves it to be true—namely, that they are powerful tonics, intended to build up the wasted forces of the patient. Such a mixture prescribed by a physician could be bought in any regular drug-store probably for a dollar; unfortunates applying to Keeley or any of his associates have to pay ten dollars. From a commercial point of view, Dr. Keeley has a perfect right to accumulate millions from his so-called bichloride-of-gold humbug, but thereby he excommunicates himself from the orthodox physician.

Since writing this article I am reliably informed that the board of health of the State of Illinois has withdrawn the license of Mr. Keeley to practice his profession. Such action certainly was only taken after the board of health was convinced that Mr. Keeley acted prejudicially and contrary to the spirit of the code of ethics which an honorable physician is bound to respect and obey. Lately Governor Fifer was induced by political pressure to have Mr. Keeley's license restored to him.

Most physicians, of course, practice for a livelihood, for even they who serve by the altar must live by the altar; but the consciousness of having mitigated human suffering and sorrow, and the gratefulness of kind hearts, is worth more—a thousand times more—than all the money Dr. Keeley could accumulate if he should live as long as Methuselah. In the old country the fees of physicians are called "honoraria"; they are given as tokens of gratitude, and not as equivalents for services rendered.

The following is an extract from a letter that appeared in the New York *Sun*, over the signature of Dr. A. R. Stephens, of Herricksville, Pa.: "I subjected the remedy (Keeley's) to a careful chemical analysis, and found it consisted of a preparation of gentian, cinchona, and a trace of opium, without any gold in any shape, unless represented in the price! I consider the remedy—taking that sent to me as a fair sample—a perfect humbug, and have kept a sample of it, which I am ready to exhibit to any chemist or professional man at any time."

The inventor of the so-called bichloride-of-gold cure, Dr. Keeley, is now making at Dwight, Ill., an average of $17,500 a week, or $890,000 a year. Besides this, there are thirty-three branches in various States of the Union, each of which has paid him from $15,000 to $200,000 for the exclusive right of using his so-called compound of bichloride of gold within a certain district.

If there is any other business which pays such large profits as this, it is not generally known. Keeley has indeed found a gold mine, with or without the chloride.

A California editor has received the following invitation, printed on card-board, with gilt edges:

"The Pacific Bichloride of Gold Club requests the pleasure of your company at its First Informal Entertainment, Wednesday evening, February 10, 1892, at eight o'clock, in the Club Room at Los Gastos." The editor replied, laconically: "The Editor . . . presents his compliments to the Pacific Bichloride of Gold Club, and regrets that there is no member of his staff eligible as a member of the club. As guests, the members of the staff feel that they might be intruders at an entertainment of which bichloride of gold would probably constitute the chief refreshment. Whatever exception may be taken to the entertainment given by the club, in respect to good taste, it is to be commended as a business proposition."

During thirty years' active practice in the medical profession it has fallen to my lot to see a great deal of drunkenness, in my service in the army and at frontier towns. I have been thinking, studying, and using remedies, trying how a perfect cure could be brought about. Much-vaunted remedies for intemperance are innumerable, but I have found them mostly valueless. I have given strychnine injections, minute doses of tincture of nux vomica, and bromide of potassium. Bruhl, Cramer, Roth, and other physicians in Europe, and Dr. Brinkle in this country, have given diluted sulphuric acid in a bitter decoction to habitual drunkards, and they have affirmed that it destroyed the appetite for alcoholic liquors. A prompt and very effectual antidote for alcoholic intoxication is a few drops of water of ammonia, diluted with a tablespoonful of water. I have given it to men completely drunk and in a helpless condition, and they were speedily restored to their senses. The Russians use an infusion of *Asarum* to counteract the craving of drunkards for alcoholic drinks. The most recent remedy for alcoholism in Russia is petroleum, or paraffin oil, to which the notice of the St. Petersburg medical authorities was called by an accident. It appears that a laboring man who had been drinking heavily for four days and nights entered, in a complete state of intoxication, a grocer's shop. Unnoticed by the shopkeeper, he staggered up to an open cask of petroleum and began drinking from it. It is related that the petroleum cured him of all the ill effects of overdrinking; the nausea, unsteadiness of gait, and headache disappeared as if by magic.

I am informed that in Denmark, Sweden, and Norway habitual drunkards are shut up by themselves in a room and are fed exclusively with bread soaked in the liquor they have been accustomed to drink. After a few days of such a diet they absolutely refuse their ration, and would rather starve than continue to eat such food. It is said that many receiving such treatment refuse to take any more liquor.

Ringer says capsicum is often useful to dipsomaniacs to enable them to overcome their pernicious habit. By removing the sinking at the pit of the stomach, it often enables the drunkard to resist the drink crave. A draught composed of ten minims of tincture of capsicum, ten grains of bromide of potassium, and a drachm of spirit of ammonia, taken several times daily, is very serviceable; or the bromide of potassium may be omitted and replaced with two minims of liquor arsenicalis or by a few drops of nux vomica or tincture of orange-peel.

In my opinion, there are two forms of drunkenness. One is established by habit (which is mostly due to the unfortunate American habit of treating), and the other is evidence of a disease. Anything which will destroy the habit of the drunkard of taking his drink automatically, so to say, will accomplish his restoration. Some physicians are of the opinion that, so far as the dipsomaniac is concerned, nothing will avail· They say the patient is doomed, because he suffers from organic disease of the brain.

I have the satisfaction of stating most positively that I know many drunkards who, through severe struggles, strong will power, earnest perseverance, and proper medical treatment have turned their glass upside down and drink no more.

I believe with some persons the habit of drinking comes from the craving for stimulants which is created in the body as the effect of overloading the stomach by excessive indiscriminate eating.

To clothe my ideas on the subject, I can do no better than to quote from a very recent and high authority, Dr. Paul Paquan, the editor of the *Bacteriological World* and author of a little volume called *The Supreme Passions of Man*, who says: "Is it not rational to suppose, then, that if any one makes a distillery of his stomach, or a reservoir for the putrefaction of meats, grains, milk, sugars, etc., in which poisonous products having undoubted narcotic, stimulating, or intoxicating effects are generated, the body is placed in the same condition as if those products had been manufactured outside and then swallowed? What is the difference between the alcohol produced by fermentation in the bowels and that produced in the barrel? True, the quantity of the intoxicating products generated in the alimentary canal is incomparably smaller than the moderate drinker takes daily, but then it is alcohol, and if manufactured every day within one, the cells of the body receiving an habitual quantity, they are bound to acquire a taste for it, or the alcohol does not create any such appetite."

In the *Annalen der Chem. und Pharm.*, 1870, the researches of Dr. Ford, corroborated by Lieben and Dupré, show that a substance exactly like alcohol exists in very minute quantity in the urine, even of teetotalers. M. Bechamp (*Lancet*, 1873) obtained from the urine of persons who had not taken any alcoholic beverage for a long time, alcohol in sufficient quantity to burn. Lieben also found that this substance existed in the urine of dogs, horses, and lions. Quantity does not produce the appetite independently. The active principle must be there as the chief factor.

That alcoholism or drunkenness is hereditary I have no manner of doubt. I have carefully watched the offspring of habitual tipplers and drunkards, and observed that male and female were exceedingly fond of all kind of spirituous liquors; and that, too, even if the father or mother had, long before the descendants were born or grown, become total abstainers from all kind of liquors. The theory that most drunkards' children are fond of liquors from the bad example set before them is thereby exploded.

On the theory that most of humanity turn their stomachs into receptacles of fermentation, and the fact that alcohol is generated in the body and produces a craving for more, I have for some time made experiments with different remedies with a view to neutralize the fermentation of sugar in the body, and thus to prevent the over-production of alcohol. I have given the medicine to individuals who had made free use of liquor for years. Some of my patients had delirium tremens, others verged on it. They are now cured.

Whether these patients have abstained from further alcoholic drinking because they had taken the medicine I prescribed, I am not positive. It is a dangerous source of error, and one which is to be avoided by every seeker for truth, to draw general conclusions from limited experience. Speculative methods in applying medicines are of no avail; but, having found that a certain remedy in a constantly increasing number of cases produces expected results, our confidence in their trustworthiness becomes confirmed, and we have to test them by repeated experiments and observation.

In medicine the ultimate appeal is to facts. My remedy for drunkenness is peroxide of hydrogen in small doses, which I have given for the last few years.

The United States Dispensatory says that the profession is indebted to Dr. B. W. Richardson, of London, for what is known of the physiological operation and therapeutical effects of peroxide of hydrogen. He found it useful in several diseases. He says sugar and starch are decomposed by it, giving out carbonic acid. In general it seemed to him to improve digestion, and therefore to be useful in cases complicated with dyspepsia. I have never known it recommended to be given to destroy the craving for liquors, but shall be happy to hear that others have applied it with the same result as myself and have seen its great value.

Sir Henry Thompson thinks that to every healthy man each drop of alcohol is so much injury. Heaven forbid me to speak in favor of the indiscriminate use of liquor of any kind. However, there are times of debility when generous wines may be freely drank, not only without injury, but with benefit; but the desire for them passes away as the necessity for them disappears. Though without any question very injurious in health, alcohol is a most valuable agent for appropriate cases, which has been proved by physiological investigation and clinical experience. Benjamin Franklin a hundred years ago said: "Temperance puts wood on the fire, meat in the barrel, flour in the tub, money in the purse, credit in the country, clothes on the bairns, intelligence in the brain, and spirit in the constitution."

Using the word temperance, Franklin did not mean total abstinence; it is the abuse and not the use of liquor which produces the calamities of humanity. The poorly paid, badly nourished, and hard-worked laborer of France, Italy, Spain, and other countries, could not possibly perform his labor without his wine; but they drink it with meals, "to eat," as they say in the old country.

The poor, hungry, shattered tramp accosting you in the streets begging for a dime to buy him a loaf of bread, if you open your heart and purse and give him the coin, will instinctively run to the first gin-mill. Why? Because of the physiological fact that an ordinary drink of whisky—about two to four ounces of alcohol—is equal to eating about ten ounces of meat, which will supply the necessary force to maintain the circulation and respiration of an average man for a day.

In a late book on life insurance the author says: "Statistics show that the mortality is less in England among the moderate drinkers than among the teetotalers, and this can be explained undoubtedly by the fact that moderate drinkers form the largest class of the population, and that possibly their moderation in this line is an index to their moderation in other things; and brings them under the class of the least mortality." The story of the Jews is overwhelming proof of the fact that moderate drinking has a tendency to make people moderate in all their walks of life. Wherever this people has been, their thrift, their chastity, their soberness, their genius have given them an influence which neither scorn nor persecution can overthrow. One of its proudest boasts is that there are so few Jewish beggars, drunkards, and paupers. In the Jewish families, at least on Saturdays, the pater families before meals blesses a cup of wine, and, after drinking himself, passes it around. And in case of poverty, his well-to-do neighbor will present him with the wine in order that he may not be deprived of the opportunity to thank God for the blessings of his gifts, because the Mosaic ceremonial required the priests to celebrate daily wine offerings.

I am a great admirer of St. Paul, the Apostle, who taught the faithful to prove everything and to be temperate, and recommended to his disciple Timothy to take a little wine for his stomach's sake.

The Radical Cure of Chorea, Epilepsy, and other Neuroses; a Preliminary Note on Smith's Method.—Dr. R. U. Greenenough, clinical assistant in the Yosemite Dispensary, has sent us the following communication:

The remarkable discoveries of the last quarter of this century mark this period as the most important in medical history. Comparing the medical beliefs of former centuries with our bacteriological researches, our cerebral localization and surgery, our pathology in general—Morgagni's *De sedibus et causis morborum* and Bonnet's *Sepulchretum* read like books of fables or mythological traditions.

But one of the most astonishing of recent investigations in the domain of the nervous system—indeed, an epoch-making discovery—emanates from Smith, the distinguished Apache surgeon, whose results I am to-day permitted to herald to the world in advance of their detailed publication in the *Apache Speculum* under the title of Testicular and Mammary Equilibration as a Radical Cure for Chorea, Epilepsy, and other Functional Neuroses.

To place this important contribution to science before the profession as briefly as possible, it seems that Dr. Smith some years ago, while in charge of the nervous department of the Yosemite Dispensary, was struck with a remarkable and hitherto unnoticed feature in hemichorea. It is a familiar anatomical fact that normally the left testicle is slightly more dependent than the right, which is to be explained by the necessities of corporeal equilibrium. The right side of the body being larger and stronger than the left, there is a tendency to compensation for such inequalities wherever this is physiologically possible without interference with the healthy status of the individual, and the left testicle, the heart, the rectum, and, in the female, the left mammary gland, answer to these requisites. They maintain the normal somatic equilibrium. He was at first struck with the reverse of this condition in two or three cases of hemichorea. In two boys the right testicle instead of the left exhibited marked hyperpendulosity, and in three girls there was a noteworthy hyperdependency (or hypophoria) of the right mammary gland. With due scientific sagacity he did not act upon his discovery until twelve cases exhibiting the same peculiar maldisposition of these organs had come under his observation. He then began to treat these conditions of inequality by means of unilateral suspensory bandages, applied in the case of the male to the offending testicle, and in the female to the hypophoric breast. Smith's apparatus for this purpose consisted merely in modifications by himself of the various suspensory bandages and methods of applying adhesive plaster now in existence. Imagine his delight at the immediate improvement that began to manifest itself in all cases thus treated. Pursuing his researches further, he soon found, however, that, although cases were improved, a radical cure was not effected unless the apparatus was permanently worn, and, when so worn, constant readjustment was required to prevent any return of the inequality. It was then that he determined upon a system of surgical procedure for the correction of these defects which posterity will surely rightly appreciate and properly dignify with the name of its fortunate inventor. The operations are for the purpose of permanently correcting insufficiencies of testicular and mammary equilibrium, which are, of course, often widely different in character. There may be a hyperpendulosity of these organs on the left side, which in itself would be over-compensatory, but, as a rule, it is the right organ which is at fault. Occasionally one organ will be too far from or too near the median line.

Following ophthalmological nomenclature because of certain apparent analogies, Smith designates these conditions generically as heterophoria, testicular or mammary, as the case may be; and the varieties are termed homonymously hypophoria, hyperphoria, esophoria, and exophoria. Sometimes a mere exsection of skin in the supramammary or inframammary region will correct the mammary strain in the female, or of a portion of the scrotum, the testicular strain in the male. It is only rarely necessary to remove portions of the glands themselves, or, in males, of the epididymis, or to shorten the spermatic cord, in order to restore the normal corporeal balance. Frequently a number of operations are necessary before the exact equilibrium can be attained. The success of the method in the hands of its discoverer has been unprecedented, as will be seen from the statistics he presents. In one hundred and eighteen cases of chronic chorea successively treated, radical cure was obtained within a week or two in one hundred and seventeen. The exceptional case was one complicated with multiple verruca upon the left hand and a large hydrocele, which made the case almost impossible of proper equilibration. In eighty-seven cases of chronic epilepsy he reports fifty per cent. of cures and 49·9 per cent. of amelioration; the latter were organic cases. Seventy-one cases of migraine, thirty-three of neurasthenia, five of paralysis agitans, and twenty-five of insanity, all yielded within a short time to the operations.

In 1887 a commission of the Apache Medico-psychological Association undertook to investigate Smith's method, the result being that they recommended its trial in all such cases before resorting to heroic measures. At the same time some of the conservative members, a minority of the commission, felt constrained to doubt the propriety of its exclusive use in treatment. One of the objections urged was that in many functional neuroses an operation of almost any kind may cause a cessation of the more marked symptoms for an indefinite period, sometimes completely curing the disease. I am sorry to learn that Dr. Smith looks upon this apparent lack of unanimous corroboration as due to invidious prejudice. I present the system with the results attained by the inventor for the careful consideration of the profession, without further comment than that all such radical therapeutic reforms should be received and contemplated in a spirit of moderate conservatism.

The Treatment of Leg Ulcers.—At a meeting of the Philadelphia County Medical Society, held on May 25th, Dr. Thomas S. K. Morton read the following paper:

It is not my object upon this occasion to describe or even mention every method that has been employed in the treatment of leg ulcers, but to present a method of dealing locally with these usually troublesome disorders that has come to be a routine practice in my hands and in those of a number of my students. As my opportunities for investigation and experiment in this direction have been unusual in extent—notably at the Polyclinic Hospital—and as the method to be described has been employed with ever-increasing satisfaction during the past few years in the treatment of a very large number of cases embracing almost every possible type and variety of ulceration, I can commend it with confidence, feeling sure that those accustomed to the usual methods of treatment will under its use find their results in astonishing contrast both as to the comfort of the patient and in the rapidity and certainty of healing.

The Dressing.—The method, therefore, is as follows: The surroundings of the ulcer or ulcers are thoroughly cleansed with soap, brush, and water, and, if necessary, shaved. The soap-suds are then washed away with simple water, and the parts douched with 1-to-1,000 sublimate solution if the ulcer is foul, inflamed, or otherwise manifestly septic. If these conditions are absent, the bichloride may be omitted. Next, the ulcerated surfaces are subjected to the powerful but harmless antiseptic action of a spray of full strength (15 volume) peroxide-of-hydrogen solution. Pouring on of the agent is almost as efficient, but very wasteful. If the spray is employed, however, it is essential to use an atomizer of which every part is made of hard rubber, as the powerful oxidizing qualities of the solution will almost immediately destroy any metallic parts with which it may come in contact. The ulcer, having been thus sprayed until active effervescence ceases, is then gently washed off by a stream of simple water, or by a pledget or mop of absorbent cotton saturated with the same. This carries away all detritus loosened up by the action of the peroxide. Next, the ulcerated area and one inch of the unaffected surrounding skin are covered in with strips of "Lister protective," half an inch broad, overlapping each other about an eighth of an inch. The "protective" should be that made of very fine silk fabric coated on both sides with a mixture of copal varnish, dextrin, and carbolic acid, after the original formula of Lister, and supplied by the manufacturers of antiseptic goods. Our object in using the protective is to keep the ulcer moist, to prevent friction and irritation at all times, and the tearing away of reparative material at dressings, as well as to furnish a guide to the epithelial cells in their excursion across the granulations. It also acts as a capillary drain, carrying the secretions drop by drop to the edge of the strips where a suitable dressing absorbs and sterilizes them. The strips of protective should first be soaked in strong (1 to 1,000) bichloride solution, and then washed in simple or cold boiled water before being applied to the wound; this precaution being necessary, as the strong antiseptic probably kills or inhibits the growth of new-forming granulation and epithelial cells, and thus retards healing. Protective quickly spoils in solution, so that it must be sterilized immediately before using.

A dressing of gauze or butter-cloth which has been wrung out of 1-to-1,000 sublimate solution and folded in six or eight layers large enough to overlap the protective strips several inches in all directions, is then neatly put on without creases or other irregularities. This serves to absorb and disinfect the discharges that may be transmitted into it from beneath the protective. Experience in each individual case will determine about how many thicknesses of gauze will be required for this purpose; but the less used, consistent with attaining the object desired, the better.

Finally comes the bandage. This is to keep the dressing in place, give the vessels support, and to prevent or relieve œdema. Few things are more unsatisfactory than the ordinary leg bandage that is put on with reverses up the leg, especially where the patient is compelled to stand and work upon the member during the progress of treatment.

No matter how expertly it may be applied, the ordinary bandage will in a few hours or even minutes after its application be found in festoons about the ankle. On the other hand, a bandage that I have been using for the past five years will not only remain just as applied for days or even weeks and be absolutely comfortable to the wearer, but also permits the employment of the fixed antiseptic dressing for leg ulcers while the patients pursue their usual occupations—no matter how arduous—almost unconscious that their formerly disabling disease is still present.

This bandage is applied to the foot and ankle in the usual manner until that point immediately beneath the calf is reached, where reverses would usually be begun. Here, however, the difference becomes apparent; no reverses are made, but the two edges of the bandage are kept equally tight, and it is thus wrapped around the limb, practically allowing it to guide itself, the surgeon only being careful to keep the edges of the roller equally tense as it unwinds. Thus it will be found that the bandage will mount upward around the calf in a spiral manner, take a circular turn around the leg just below the knee, then descend again by a downward spiral around the calf, again mount upward as before upon the opposite side, slightly overlapping the previous turn, and so on until finally the leg will become enveloped in a bandage that might be called a figure-of-eight of the calf. It should be put on as tightly as the patient can comfortably bear, smoothly, and care should be taken that no points are left without being supported by at least one of the turns. A muslin roller, six yards long and three inches wide, will be found about the proper dimensions for this bandage. This method of giving support to the circulation of a leg is equally applicable even after the ulcer has been cured, or where swelling or varicosity exists independently of ulceration. Patients can be readily taught how to apply it, and usually give it preference to elastic stockings or rubber bandages. My experience with these latter has not been favorable; the stockings are very good when new, but soon decay, stretch, and become useless as a support, while the rubber bandage retains perspiration and often gives rise to intense irritation. Not every patient is capable of wearing either, and all, in my experience, much prefer the bandage that has been described when it is properly applied. A bandage of German manufacture can now be purchased in which fine rubber threads run in the length of cotton webbing, which can be similarly applied and is very comfortable and satisfactory. However, it is not cheap and is prone to decay.

Redressing.—Until the parts have been rendered odorless, free of all irritation, and aseptic, it is advisable to redress the leg in the same manner every day, or at furthest every other day; also, until these conditions have been secured, to use the bichloride-of-mercury solution as a douche. When, however, asepsis has been attained, strong antiseptics should be discarded in redressing, as they retard healing; simple water is then to be used instead. Subsequently the dressing should be renewed every second day if the person is using the extremity, but if he is in bed, dressings need not be renewed so frequently after the discharges have become scanty.

In this, as in every other method of treating leg ulcers, if the patient will consent to remain in bed or reclining, healing takes place very much more rapidly, but under the present system the number of instances where confinement is *essential* for healing is exceedingly small.

With this protective and gauze dressing, I believe that Nature's method of healing is best assisted, and that under the conditions of moderate moisture and freedom from irritation—both traumatic and septic—is secured as rapid healing as can ever be anticipated. As I never expect surgery to evolve a method of uniting simple fractures more rapidly than at present, neither can I look forward to the cure of the great majority of leg ulcers more rapidly than under the favored dressing—that is, they fill up to the level of the skin and are covered over with epithelium without waste of reparative material just as rapidly as Nature can possibly furnish it, the time required usually being incredibly short.

Exceptions.—For clinical and remedial purposes it is my custom to divide all leg ulcers into the following classes:

1. Simple.
2. Syphilitic, diabetic, nephritic.
3. Tubercular.
4. Malignant (principally epitheliomatous degeneration of others).

To all of these the above-described local treatment is applicable, except certain cases of Class 3 and all of Class 4, which require excision by the knife, with subsequent suture or grafting, by Thiersch's method, or possibly amputation.

Syphilitic ulcerations require, in addition to the usual local treatment, some form of anti-specific medication. For this purpose I have employed the following mixture with great satisfaction:

℞ Hydrargyri bichloridi	gr. j;	
Potassii iodidi	ʒ vj;	
Syr. sarsaparillæ comp	q. s. ad ℥ iv.	M.

Sig.: Teaspoonful after meals.

Modifications.—Where pus or other discharge from an ulcer is excessive, it is well to dust on the merest pinch of iodoform or aristol before applying the protective; or, what is equally effective, paint the ulcer with the pyoctanin pencil.

If granulations are slow in forming or flabby, it is wise to paint the surface at each dressing with nitrate-of-silver solution (15 grains to 1 ounce of water), or, if greater stimulation is necessary, to scarify the ulcer and its surroundings by superficial rapid strokes of the heel of a blunt tenotomy knife or otherwise. The pain resulting from this little operation, while not severe, yet may be obviated by allowing a pledget of absorbent cotton saturated with a five-per-cent. cocaine solution to remain in contact with the surfaces for five minutes before applying the scarificator.

Exuberant granulations can most readily be removed by light parallel strokes of a fine-pointed pencil of nitrate of silver, or by scarification as above.

If the area of the ulcer be large, and the granulations are level with the surrounding skin and healthy, skin-grafting may be employed. This may be undertaken by the usual methods, or by one that I have found quite as satisfactory, based upon the practice of horsemen, who, by shaking epithelial scales from the curry-comb upon ulcers in the horse, are usually able to cure them in a very short time. So, gently scraping up a little mass of the swollen, softened, and aseptic epithelium from skin that has been under the protective just outside the limits of the ulcer, it is gently spread over the granulations. A number of these cells will generally be found to have taken root as grafts in various parts of the ulcer at the next dressing, and will wonderfully hasten its final closure.

If healing of an ulceration is retarded by the presence of sloughs—and sloughs are very slow to separate in the absence of an active suppurative process—it may be expedient to hasten their separation. If already loose at the edges, they may usually be dissected off without pain by scissors and forceps. Otherwise, the best plan is to digest them out by means of pepsin or papoid. When pepsin is used for this purpose, I build a retaining wall of tough cerate about the ulcer, and then pour into the little reservoir thus obtained enough of the following pepsin solution to cover the ulcerated area:

℞ Pepsin, pure	gr. j;	
Water	℥ j;	
Hydrochloric acid	♏j.	M.

Allowing this to act for about an hour, occasionally renewing the solution, the slough will as a rule be found almost or quite digested and liquefied, or so loosened up as to be readily removable by scissors and forceps. But much more convenient than this will be found the dusting of a minute portion of papoid or vegetable pepsin beneath the protective strips and allowing it to act until the limb is redressed next day. This succeeds well, because papoid acts best in a concentrated medium of any reaction whatever—pepsin only in a dilute acid solution.

Where the cellular tissue or lymphatics have become infected by septic material transmitted from a foul ulcer, or a phlebitis, acute or chronic, has been similarly originated, I frequently apply immediately over the strips of protective (here omitting the gauze) a sheet of lint large enough to cover in the entire affected area, and spread with an ointment composed of—

Ichthyol ammoniat	20 parts;
Lanolin	80 "

Heavy wax-paper is put over this, and the usual bandage applied.

Ichthyol thus combined acts as a most powerful absorbent, lymphatic and circulatory stimulant, and antiseptic. So also this application will be found very useful applied over the protective strips when ulcers are complicated by eczema or great induration and infiltration of surrounding tissues. When the affected area has been covered in with the ichthyol for a few days under a firm bandage, most of the infiltration will usually have disappeared, and the gauze dressing can be applied over the protective. Since learning the value and power of ichthyol, I have had practically no use for plaster straps in treating even the most indurated leg ulcers.

Where ulcers are associated with excessive varicosity of veins, the question of proper treatment for the dilated vessels will arise. Any varicose condition of the leg can be kept entirely under control, and the patient comfortable and able to follow his vocation, by means of the bandage that has been previously described, provided, however, that the dilatation does not extend above the knee. But if the veins of the thigh are also involved, there is no method of giving them adequate support, so that, if they are very troublesome, excision *en masse* is the only advisable resource. Of course, varices or isolated veins below the knee can be likewise dealt with if such radical treatment for any cause (such as constant recurrence of ulceration) be considered advisable. I have recently had several cases in which I had recourse to very extensive excision of varices of the thigh and isolated veins of the leg with the most satisfactory results. These I expect to present in detail in a future communication.

Mortality in Cities in the United States.—The following table represents the mortality in the cities named, as reported to Dr. Walter Wyman, Surgeon-General of the Marine-Hospital Service, and published in the Abstract of Sanitary Reports for June 24th:

CITIES.	Week ending—	Population, U. S. Census of 1890.	Total deaths from all causes.	DEATHS FROM—										
				Phthisis pulmonalis.	Yellow fever.	Small-pox.	Varioloid.	Varicella.	Typhus fever.	Enteric fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping-cough.
New York, N. Y.	June 18.	1,515,301	858	80	..	4	..	1	2	5	30	18	37	4
Chicago, Ill.	June 11.	1,099,850	396	..	..	..	..	..	..	13	10	12	2	1
Chicago, Ill.	June 18.	1,099,850	500	..	..	..	..	..	..	14	7	16	2	4
Philadelphia, Pa.	June 11.	1,046,964	375	49	..	..	..	..	..	4	10	21	3	3
Boston, Mass.	June 18.	448,477	199	25	..	..	..	..	..	1	5	11	2	1
Baltimore, Md.	June 18.	434,439	177	22	..	..	..	..	..	3	2	4	5	..
San Francisco, Cal.	June 11.	298,997	...	18	..	..	..	..	..	.	1	3	..	..
Cincinnati, Ohio.	June 17.	296,908	104	18	..	..	..	..	..	3	1	2	..	1
Cleveland, Ohio.	June 18.	261,353	87	8	..	..	..	..	..	8	1	1	1	..
New Orleans, La.	May 28.	242,039	162	13	..	..	..	..	..	1	..	2	..	..
New Orleans, La.	June 4.	242,039	165	18	..	..	..	..	..	..	..	1	..	2
New Orleans, La.	June 11.	242,039	168	12	..	..	..	..	..	2	..	1	..	..
Washington, D. C.	June 21.	230,392	137	15	..	..	..	..	..	4	..	1	..	2
Detroit, Mich.	June 18.	205,876	104	3	..	..	..	..	..	9	11	6	..	..
Minneapolis, Minn.	June 11.	164,738	35	..	..	..	..	..	..	1	1	..	1	..
Minneapolis, Minn.	June 18.	164,738	35	..	..	..	..	..	..	1	1		..	..
Louisville, Ky.	June 18.	161,129	56	10	..	..	..	..	..	3	..	1	..	..
Rochester, N. Y.	June 18.	133,896	41	6	..	..	..	..	..	1	2	..	..	..
Providence, R. I.	June 18.	132,146	60	..	..	..	..	..	..	1	1	..	..	..
Toledo, Ohio.	June 17.	81,434	26	..	..	..	..	..	..	..	..	2	..	..
Richmond, Va.	June 18.	81,288	72	4	..	..	..	..	..	..	..	..	2	..
Nashville, Tenn.	June 18.	76,168	32	5	..	..	..	..	..	..	..	1	..	1
Fall River, Mass.	June 17.	74,398	32	2	..	..	..	..	..	..	1	1	1	1
Portland, Me.	June 18.	36,425	14	..	..	..	..	..	..	..	..	..	..	..
Binghamton, N. Y.	June 18.	35,005	18	3	..	..	..	..	..	..	..	1	..	..
Mobile, Ala.	June 18.	31,076	12	2	..	..	..	..	..	..	..	..	..	..
Galveston, Texas.	June 10.	29,084	15	..	..	..	..	..	..	..	..	..	..	..
San Diego, Cal.	June 11.	16,159	1	..	..	..	..	..	..	..	..	..	..	..

Anæsthesia in Veterinary Surgery.—"In the progress of veterinary science there has been perhaps no greater advance toward the alleviation of animal suffering than the introduction of the use of anæsthetics, which during the last decade has rapidly gained ground. Concomitant with the adoption of these means have been many refinements in the practice of an art whose sphere of usefulness is thereby extended, and whose position in public estimation must be accordingly elevated. It is now, we are glad to observe, the ordinary practice in delicate and painful operations to resort to the use of general or local anæsthesia. On the Continent, for general anæsthesia chloral hydrate, by intravenous injection, is largely employed, as much as two ounces often being used for the horse. This agent is sometimes administered by the mouth to animals of the same class, in doses of from five to nine ounces. This practice has not found much favor with British veterinarians, chloroform and ether being in general use for all animals. Horses and ruminants are rarely affected unfavorably by chloroform, fatal results being very uncommon. From two to twelve drachms is usually sufficient to induce anæsthesia, which may be maintained for indefinite periods by proportionate quantities. A mixture of chloroform and ether is preferred for dogs, who require greater care, but though a small proportion of these animals unaccountably succumb to the effects of chloroform, judicious administration, with due regard to regularity of breathing and equalization of dose, minimizes the danger. For amputation, as of tongue or penis, castration, cystotomy, abdominal section, and 'firing,' it is in every-day use and highly appreciated, while in obstetric practice, where much operative interference and force are often necessary, great difficulties and dangers are lessened and much suffering prevented. For removal of tumors, opening of fistulæ, neurectomy, 'firing,' etc., subcutaneous injection of cocaine has become common. The appliances for administering chloroform and ether to the lower animals are varied and numerous, but the sponge in a leather bag, perforated at the bottom, appears to be the most general form. It would be difficult to estimate the amount of suffering thus spared the animal, the advantages of more rapid recovery, etc., to the owner, or the increased comfort and safety of the operator; and we hope every means will be adopted to encourage the use of the beneficent agency among those creatures who have to submit to our care."—*British Medical Journal.*

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

THE NEW YORK MEDICAL JOURNAL, July 9, 1892.

Original Communications.

GASTRORRHAPHY
FOR DIMINISHING THE SIZE OF A DILATED STOMACH.*

By ROBERT F. WEIR, M. D.,
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In December, 1889, I had occasion to perform a gastro-enterostomy in a patient, aged forty-one, for the relief of a stenosis of the pylorus of two years' duration, and associated with the usual symptoms of that lesion. The stomach at that time was distended to a degree that would admit of the reception of between eight and ten pints of fluid, and its lower level reached some three inches below the umbilicus.

The opening in the stomach, after Wölfler's method, was made some two inches in length, and was accomplished by means of Abbe's rings. It was situated between five and six inches from the pylorus. Rapid recovery took place, and the patient quickly gained in weight and improved in health. The details of this case have been already reported elsewhere.†

A year later he presented himself again to my observation, when I learned that his former symptoms of vomiting and gastric distress had shown themselves. The vomiting occurred either daily or every second day, and consisted of a considerable amount of glairy mucus mingled with undigested food. The first thought was, that possibly the gastro-enteric opening—though made of a length which was beyond that which has been advised by Senn and practiced also by our German *confrères*—might have contracted unduly, or possibly, as has been met with in other instances, might have entirely closed; but this was negatived by the fact that air pumped into the stomach could be heard with the stethoscope to pass into the intestines below, and that these latter, after a certain amount of injection of air, were found to be distended. The cicatrix of the abdominal incision was also found to have yielded and to admit in this way the occurrence of a moderate-sized ventral hernia. This was excluded as the cause of the vomiting, and of the moderate distress with which the patient also suffered, by the fact that the use of a well-applied pad afforded no relief.

From time to time during the year 1891 he presented himself to me for inspection, and I found he was still annoyed by these attacks of vomiting. They were temporarily relieved by washing out the stomach, but the patient was more or less incapacitated from work by the existence of these symptoms. In the early part of this year I felt that perhaps something more could be done to relieve him. I was convinced, by the exclusion of other symptoms, that the still existing atonied condition of the stomach was at fault in this case; that either the opening made by the gastro-enterostomy was situated too near the pylorus to accomplish the thorough evacuation of the stomach, or that the part beyond, from its great relaxation, like an atonied bladder, failed to contract and sagged downward, forming a *cul-de-sac* in which the stomach contents collected. The procedure that first came to my mind was that I should endeavor to narrow the stomach by making a resection of a considerable portion of its walls. Finally, I was led to consider that a more simple procedure might perhaps be adopted, especially as the method proposed was devoid in a great measure of the risks that belong to a removal of a portion of the gastric wall. Therefore I determined to take a tuck in the stomach, sewing together its peritoneal surfaces, and in this way accomplish the end desired.

Accordingly, on the 9th of March, 1892, under ether, a five-inch vertical incision along the course of the cicatrix of the previous operation and in the center of the existing ventral hernia was made, the abdominal cavity opened, the stomach sought for, seized, and drawn out of this opening as much as possible. The gastro-enteric wound was found in the situation indicated, the intestinal walls thoroughly adherent to those of the stomach, and through the small intestine the finger could be passed by inversion of the intestinal walls into the stomach, showing that the opening into the latter organ was at least three quarters of an inch in diameter.

The intestine itself presented an appearance that is worthy of a slight note. Opposite the gastric opening the lumen of the jejunum was increased to nearly double the usual size. This enlargement extended to a distance of from three to four inches on each side of the gastro-enteric opening. Beyond this point the intestine became normal in appearance. The stenosis of the pylorus was again examined and found to be as recognized at the first operation—of a simple character. The greater curvature of the stomach bagged downward, and was limited in its extraction from the abdominal opening, now made, by an adhesion along the left extremity of the greater curvature to the spleen. The end of the operation I proposed was to attach the greater curvature to the lesser curvature along the portion of the stomach to the left of the gastro-enteric opening. This was done in the following manner:

In the center of the space between the upper and lower borders of the stomach a dimpling in of the gastric wall was made first by pressure of a sound to a distance, say, of an inch. A row of eight or ten interrupted silk sutures was now made, passing through the serous and muscular coats for a distance of from six to eight inches, and the sound withdrawn. A second series of sutures, at about an inch from the first, was again made dimpling in an additional portion of the stomach wall and in a similar manner. A third and fourth row of interrupted silk sutures were applied until through a distance of some four to five inches the greater curvature was applied to the lesser curvature. When this was completed, a double fold of the stomach, estimated equal to the breadth of the hand and nearly its length, had been made in such a way that this projected into the cavity of the stomach.

Availing one's self of the surgical interference prompted by this operation, the ventral hernia was also remedied. The fascia posterior to the separated recti muscles had, it was found, glued itself to the anterior fascia of this muscle. This rounding fascia was then split along the edge of the muscle, and the posterior layer, thus liberated, was sewed together throughout the entire length of the wound by numerous fine silkworm-gut sutures applied about half an inch apart. They were cut short and left imbedded. Then the bellies of the rectus muscle were in a similar way sewed together by two or three stitches of a like character about an inch apart. The anterior layer of the fascia was also sewed together separately, and finally the skin.

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* Read before the American Surgical Association at its tenth annual meeting.

† *Medical News*, December 14, 1889.

No reaction followed this operation, the patient's stomach being kept at rest, and nourishment was effected by rectal enemata. On the sixth day the patient was allowed to have beef-tea, subsequently beef-juice, and later peptonized milk. At the end of the second week his food was gradually increased to milk and eggs, and at the end of the fourth week he was allowed the usual diet. From that time to the present he has lived in the ordinary manner so far as nourishment is concerned.

The hernial opening closed, except at the upper angle of the incision, where a slight protrusion appeared on coughing at the termination of the third week. Under cocaine, the wound was again opened here and stitches of a similar character applied which resulted in a cure. Since the operation he has not had once an attack of vomiting, he has been free from his distressing feelings, and he has also gained in strength and weight. His bowels have become more regular, though, unluckily, the condition of the urine as to quantity before and after the operation was not noted. This secretion in sundry conditions of dilatation of the stomach has been noticed to be very much lessened.

I had believed, in entering upon this procedure, that I was about to resort to a novelty in surgery. However, two days before the operation, I learned that this very operation had already been performed by Bircher, of Aarau, Switzerland, in three cases for the relief of dilatation of the stomach. These cases I beg to summarize as follows:

Case I.—A man, aged forty-six, who had suffered for five years with pains in the back which were relieved by vomiting. These attacks lasted for days. Tenderness was experienced over the stomach. He grew weaker and thinner, and on May 26, 1890, he entered the hospital at Aarau. Dilatation of the stomach was recognized reaching much below the navel. He was treated by regulation of the diet and washing out the stomach. Much undigested food, with mucous secretion, was pumped out in this procedure. Improvement took place. However, whenever the washing out was stopped, vomiting occurred. He was discharged in December of the same year, but returned in January, 1891, complaining of much stomach pain. Lavage was again resumed with benefit, and he was again discharged. He re-entered again for a similar disturbance in April, 1891. On July 21st of this year the operation for narrowing the stomach was undertaken. The stomach was previously washed out and carefully emptied. Parallel to the left edge of the ribs, an incision fifteen centimetres long was made and the peritonæum opened. The stomach was drawn out. The edges of the wound being pulled apart and the lower edge being pulled upward, the greater curvature of the organ was readily reached and sewed to the lesser curvature by means of thirty-five silk stitches. This was aided by laying a long forceps on the stomach wall after fixing a suture at each end of the fold so that its weight pushed inward for the time being the stomach fold and allowed readier suture. The stitches were passed only through the serous and muscular layers. On the lesser curvature toward the pylorus was found a suspicious hard place the size of a walnut, but, as it had been promised to the patient that the stomach itself would not be opened, operative procedure for the removal of this spot was not undertaken. The wound was therefore closed and prompt healing took place.

For six days thereafter nutrition was carried on only by enemata, and on the twelfth day the patient was about. On the twenty-first day he took, on his own responsibility, a "beer spree" without mishap, and from that time his health was completely restored and he was able to work without detriment. Digestion became normal and absorption also. His urine was increased, which previously had been very much diminished in quantity. The patient's health continued good for three months, when some symptoms of stomach catarrh with vomiting recurred. There could be then felt a resisting place over the pyloric end of the stomach. A laparotomy for the resection of the supposed involved stomach wall was advised. On October 19th this operation was performed. The stomach wall near the pylorus was excised, but death resulted on the second day. As a result of the first operation, the stomach was found of normal size; the stitches had formed tight adhesions which were not easily to be pulled apart. The fold of the stomach formed at the first operation projected into the cavity of the organ nearly the same size as at the operation. The serous membranes apposed to each other within the line of union made by the stitches were only slightly adherent, so, had it not been for the sutures, they would not have held together. The hardened mass removed by excision was of a cicatricial nature from a healed round ulcer. (The examination mentions nothing of the existence of a pyloric stenosis. R. F. W.) Bircher says that as a result of the operation the dilatation was in an anatomical and physiological sense cured, and the lowest edge of the stomach was by the surgical procedure raised up fully a hand's breadth.

Case II.—This occurred in a woman, aged sixty, who for four years had signs of gastric dilatation, due to muscular disability and not from any recognized obstructive causes. No tumor was to be felt. The lower edge of the stomach reached below the navel. For this case the fold was made more vertically oblique. In the previous case the fold had been parallel to the long axis of the stomach. Prompt healing without any detrimental symptoms took place, and the patient was discharged from the hospital on the thirty-third day, with digestion normally performed, with evidence of characteristic absorption, as shown by the urine, and improved defecation, and general health. Three months later she was seen completely well, with normal digestive functions.

Case III.—A man, aged forty-three, who for twenty-one years had digestive symptoms. During this time blood had frequently passed in his stools. He was unable to work. He had been one year on milk diet. In October, 1889, symptoms of vomiting had become very bad. On entrance into the hospital in December, 1889, loud splashing noises were recognized. Washing out removed much undigested food. Improvement took place under regular lavage. In March, 1890, hæmorrhage followed the use of the stomach pump. Relapse occurred in September of the same year, with hæmorrhage and pains in the stomach. After being a while in the hospital he was again discharged improved, but another recurrence took place in October, 1890. In May, 1891, another sojourn in the hospital. At that time enlargement of the stomach below the umbilicus was recognized. Operation for diminishing the size of the stomach was undertaken August 23, 1891, as in the first case. Besides the dilatation there was found a cicatrix on the anterior wall the size of a franc-piece. After the patient's recovery from the operation there was a prompt disappearance of the symptoms of dilatation, though some signs of chronic catarrh of the whole intestinal tract remained for some little time, but these were finally relieved by Carlsbad cure, after which he remained well.

Dilatations of the stomach, it is true, are generally due to obstructive disease at or near the pylorus. However, this condition of enlargement is said to occur not infrequently from intrinsic causes. In either event its repair by surgical means in long-existing cases should hereafter enter into consideration. If the dilatation be associated with a recognized simple pyloric stenosis, and this obstruction be overcome by the Mikulicz-Heineke procedure of pyloroplasty, or by the institution of a gastro-enteric opening, it may be that at the time of the operation for the relief of the stenosis the surgeon may consider the advisability of either immediately remedying the undue dilatation by gastrorrhaphy or effecting this diminution in the size of the organ more properly at a later date, when it has been shown that relief was not to be accomplished by the primary surgical procedure. This operation of diminishing the size of the stomach, from the simplicity of its operative technique, may be assumed to be one of comparative freedom from risk, though, of course, further experience is required to pronounce with any positiveness on such a point as this. It would therefore seem to be properly applicable to those cases of dilatation of the stomach which are constantly found running to a hospital, who are only improved temporarily by the use of lavage and whose progress is associated with repeated relapses.

PHASES OF NURSING.*

By J. H. EMERSON, M. D.

I HOPE I may be pardoned for believing that a few remarks on the trained nurse are not outside the purview of a clinical society. She is surely a valuable clinical aid to us in daily practice, and whatever may increase her efficiency as a therapeutic agency is important to us as physicians. Most of us are of an age to compare the service of the trained female nurse in the hospital ward and in the private sickroom with the nearly untrained assistance we had to put up with before her advent. No one would now willingly return to the old *régime.* No one will refuse to recognize the gain in cleanliness, in order, in the elimination of old-time prejudice and superstition; also that these and other advantages are due to and largely a part of the higher degree of intelligence required for the work and very generally found among the workers. We expect more from the trained nurse of to-day, and, as a rule, she recognizes the claim, being drawn from a higher grade than the untrained attendant of former years. In fact, the old material would not have benefited by modern training, could not have successfully received or assimilated it. The school will now admit as probationers only such as are still young enough to retain the plastic mind, as yet unincumbered with useless or objectionable traditions and habits, capable of receiving what is new, and, when the principles laid down are broad and liberal, of profiting by the experience of life as it comes, and not perverting it. All this is important, and it looks as if, in mental equipment, the trained nurse was fully up to the requirements of her work, as far as the intellectual faculties are concerned. Nay, is she not frequently found transforming herself into a doctor, or the wife of a doctor? Unfortunately, the attainments of mind, the moral qualities, and the good course of instruction which qualify a young woman to receive a diploma from a training school are not always coupled with a firmness of character and a devotion to a really high calling such as enable her to resist the demoralizing influences which sometimes surround her. In some families she may be waited on and flattered, or, on the other hand, may be unreasonably blamed and her good qualities not appreciated. While she thus shows the faults and weaknesses of humanity, she is not above criticism, and the physician, whose routine labors are lightened and whose anxieties are measurably relieved by the intelligence and watchful care he has a right to expect from her presence, yet sees her shortcomings, her frequent failure to take and fill her proper place in a family, and looks about him for means of improvement. A certain nurse may think of her own comfort and privileges first, with little regard for the fatigue or convenience of other members of the family, or even the best interests of her patient; or may forget that ways of speaking to or dealing with her patient which are permissible in a hospital jar painfully upon a family when applied to its loved and honored head; or may neglect the care of the room which is her proper charge; or may gossip or make trouble with the house servants; or be needlessly extravagant of the linen, the supplies, or the dressings she uses; or may show no disposition to utilize her idle time for the benefit of the family; or may be impatient or ill-tempered, so as to make herself anything but *persona grata* in the household—while still we might hesitate to say that she did not strictly do a nurse's duty.

In this connection it will not do to ignore another influence injurious to the efficiency of the trained nurse as calculated to put her in a false position. This springs from a sentimental notion, entertained and acted on by many persons, that these women enter upon their vocation from certain lofty and philanthropic motives—a desire to soothe the couch of the dying, to bathe the aching head, and, in general, to minister to the woes of suffering humanity. Witness the views expressed by several of those who took part in a recent newspaper discussion of another phase of the trained-nurse question. Nothing, I believe, is further from the truth with most of these young women.

Some may take up nursing in preparation for missionary or other philanthropic work, but the majority take a most practical view of the subject. They must work for their living, or, if not actually for their living, for other desirable objects, and they regard nursing as offering them a career more agreeable, remunerative, and independent than being a shop-girl. The girl of an ambition above the average very properly looks upon the position of the trained nurse as far higher than that of the domestic servant, though many of her offices must of necessity be equally menial. The fact that it demands a special period and course of instruction, while it elevates the position, would still place it beyond the reach of many who seek it were it not for the liberal policy adopted in most of the training schools under which the would-be nurse is maintained during her pupilage. This helpful system is most friendly, considering the large number of applicants, and puts the institutions into a position they could well utilize for the real advantage of their graduates.* This brings us to the consideration of means by which some of the disadvantages of the present system might be done away with and improvements introduced. I have a very strong impression that a registration and some supervision of trained nurses would be of great benefit to nurses, physicians, and the public, and the few facts and reasons I can adduce to back up my opinion are brought before you with many regrets that want of time has prevented me from making them more complete in lines I had proposed to follow. No doubt existing abuses connected with this service in New York and its vicinity have been largely due to the relatively small number of trained nurses in proportion to the demand for them from the large territory that looks to this city for its supply. The first of the graduates of the New York Hospital Training School was in 1878. The total number up to the present time is about two hundred and twenty, while of these but ninety-five are now engaged in private nursing —a considerable proportion of the others, apart from such as have married, died, or entered upon other occupations, having gone to fill positions as matrons, superintendents, etc., in other training schools and hospitals. Of the four hundred graduates of the training school attached to Bellevue Hospital, which was the pioneer or parent institution of the kind in this country, one hundred and thirty are now on the registry for service in New York, and they were first available in 1874. Beginning with that date, the community realized that it had a new want and that that want could be met. So the new nurses were in eager demand wherever money could bring them. The earlier ones had been selected and trained with great care and were sent out with no little prestige, and bearing with them a full sense of their responsibilities to the school and to womankind no less than to the public. The good name they soon established led many to follow in their footsteps, with the natural result that quality has hardly kept pace with numbers. Still, if all could not be good nurses, all could charge good prices, and we can only hope that the increasing knowledge of what good nursing is will make the public, by degrees, so critical that its demands can only be met by the better class. It does violence to the feelings to realize that practically the best work in trained nursing is reserved for two classes in the community—hospital patients and the rich. Yet such is the fact, for the high price charged for this service makes it an unattainable luxury in many a family where it is needed, and would be highly appreciated both by patient and doctor. So we must hope that the great demand for well-trained nurses may, in the near future, lead to such an increase in the number of them that competition will materially reduce their charges. There is danger, however, that numerical increase with attending competition may lower the standard of excellence to a greater extent even, and perhaps in ways not anticipated; for even now the pressing demands of the wealthy, joined with that sentimental glamour to which I have referred as hovering over her office, have combined to test the single-mindedness and faithfulness of the trained nurse in ways and to a degree that only the best can resist.

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* Read before the New York Clinical Society, February 25, 1892.

It appears to me that some form of supervision or control is essential as a safeguard against the dangers of deterioration, for the consequences of this might be as disastrous in a different way as in the recent instances where certain male nurses have been found guilty of assault and of robbery. It is a matter of universal experience that all work is better done if the worker knows that a reviewing or supervising power or authority exists ready to criticise or to sustain him. Let there be somebody to whom those who feel themselves aggrieved may make their complaints, and from whom suggestions for improvement may emanate, even though he has no positive power of carrying them out. This somebody may be merely a kind of official representative of public opinion if you will. I conceive that one chief reason why the system of trained nurses in hospitals has proved so satisfactory, why the graduates have gone out to private work with the prestige they have (for it is in private work that my own experience with them chiefly lies), is that they have constantly to look up to some higher authority—a head nurse, a matron, a superintendent, a committee of managers—who will be critical of their work and hold them responsible for a faithful discharge of it. Such an oversight of the graduates would act to create and maintain a standard of character qualification and conduct such as can not now exist for the nurse who has once severed her connections with the parent school. It would, of course, be impossible to formulate or define such a standard, but daily contributions to it would be made in the details of favorable reports on the nurses alike from physicians and employers, while its disciplinary features would develop from complaints, which would certainly require sifting and verification, but the repetition of which from new sources in subsequent services would furnish confirmation. An effort at such supervision, based upon reports from employers and physicians, was indeed made some years ago in case of the graduates of one of our large hospital schools. I am personally cognizant of instances where the disciplinary end desired was effectually accomplished. There were features about the plan as there practiced, however, which were not well conceived, and, owing partly to the unpopularity of these features with the nurses and partly, I believe, to considerations personal to that institution at that time, it was given up.

Should the question then arise as to how such an authority should be constituted or who should discharge the functions proposed, several answers would suggest themselves. Such a scheme must of course depend upon volunteer action, approving itself primarily to the nurses and physicians from its obvious advantages, and compulsion coming only from the force of the public opinion we should hope to conciliate. The public could hardly be less convenienced than by the present lack of system.

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* It may be interesting to state that at the New York City Training School for the island hospitals, the last report I could find showed that during the year there had been two hundred and ninety-one applicants, of whom forty were accepted for training; while at the training school attached to Bellevue Hospital, the last report showed one thousand three hundred and seventy applicants within the year, and thirty received for instruction.

If the authorities of the schools or hospitals referred to were willing, in furtherance of such a plan, to continue the needed supervision in conjunction with the registration that some of them maintain for their graduates, it would probably be more readily acquiesced in by the nurses than if established by some authority to which they were strangers. Obvious objections would be the want of a uniform standard, and the tendency to the growth of cliques and mutual jealousies. Seeking for a competent body not open to these disadvantages, we recall the fact that the first training school in New York was an outgrowth of needs first fully recognized by the members of the State Charities Aid Association, and that it might, as an independent organization, undertake the administration of such a system for graduates of all schools. But the experience of other large cities in this country points to medical registration and supervision as offering the best solution. Thus, in Brooklyn, the Medical Society of the County of Kings has for a number of years maintained a Directory for Nurses, "meeting," writes the secretary, "a general want of the public, but more particularly of physicians, facilitating the procuring of competent nurses." Philadelphia has a similar system in operation under the auspices of the College of Physicians, its methods almost identical with those used by the New York school to which I have referred above, with the addition of fees for registration and for looking up and sending the nurses. They expect to be able to furnish a nurse anywhere within the city in an hour from the time the office is notified. In Boston, public appreciation of this plan is proved by its pecuniary success, the fees contributing in no small degree to the support of the Medical Library Association, which administers it. New York, however, is far behind other cities in the facilities it has for even procuring a nurse. The search for one involves the expenditure of an unreasonable amount of time with no assurance of satisfactory results. One may go or send to one or several hospitals or training schools, where he may happen on a nurse disengaged, whom he knows to be fit for the case in hand, or who is recommended by a superintendent, matron, or it may be an office clerk. On the other hand, he may visit half a dozen such places before getting the names and addresses of nurses believed to be disengaged. By perseverance the searcher may finally come to speech of a nurse and engage her, if the sex and age of the patient, the nature of the ailment, the locality, the time of night or day, the doctor in attendance, and the prospect of remuneration meet her views. Even then the nurse feels herself at liberty to leave her place and patient at once if dissatisfied, and there is no one to call her to account or prevent her from treating future patients in the same way. It has happened within a month that a nurse who solicited employment from me took an engagement with a patient of mine when she was so exhausted by the work at her last place that she could not keep awake at night, and could hardly stand by day. At the end of twenty-four hours she had to abandon the case in a state of hysterical weakness, without warning and under circumstances that led to great anxiety and distress to my patient, a feeble and aged woman. Another trained nurse, sent from a training school to a wealthy invalid lady, at once asked the patient if she were not "nervous," and, receiving a hesitating affirmative reply, declared that she could not stay with such a patient, that they might pay her ten cents for car-fare, and departed forthwith. Such instances—and many much more serious ones could readily be collected among my hearers—merely indicate some ways in which trained nurses depart from a very moderate standard of good service. Such instances, if brought to the knowledge of any recognized or responsible superintendent or registering officer, would lead to careful inquiry and to at least temporary suspension from work, with a warning. In conclusion, let me hope that I have turned your thoughts toward some deficiencies in the present service of trained nurses, and that you may feel disposed to urge my suggestions for a remedy when opportunity offers. If I have assumed an attitude of criticism it is not because I do not appreciate most highly the trained nurse and her work. She is of inestimable value to us, and I want to help her to sustain and continue to deserve the reputation she has won.

81 Madison Avenue, *February 25, 1892*

A FEW STRAY HISTOLOGICAL AND BACTERIOLOGICAL FACTS CONCERNING SOME SKIN DISEASES.*

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At the urgent solicitation of the secretary of this association, I am induced to present these few remarks, histological and bacteriological, upon some diseases of the skin.

Lupus.

Noli me tangere, *fressende Flechte*, *Wolf*, *dartre rongeante*, *herpes exedens et non-exedens*, and *esthiomène serpigineuse*, are all terms which have been applied to this affection. Clinicians recognize two forms of this disease: (*a*) *Lupus erythematodes, seu Cazenavi*; (*b*) *Lupus vulgaris, seu Willani.*

Lupus vulgaris is divided into the following six varieties, to wit:

1. *Lupus maculosus*, reddish-brown spots as big as a pin's head to that of a pea.
2. *Lupus tuberculosus, seu nodosus*, reddish-brown papules or nodules, varying in size from a pea to a hazel-nut.
3. *Lupus exfoliativus*, lamellæ of epidermis covering brownish-red skin.
4. *Lupus exulcerans*, atonic ulcers resulting from softening of infiltrations.
5. *Lupus hypertrophicus*, new formations raised above the surface of the skin.
6. *Lupus serpiginosus*, large ulcers extending peripherally.

These are only stages of one and the same disease, lupus maculosus being the earliest, and the later-named forms belonging to the more advanced manifestations of the disease. Bacteriology and histology prove this. Lupus vulgaris is, however, entirely different from lupus erythematodes. In the present state of our knowledge lupus vulgaris must be looked upon as a localized tuberculosis of the skin. Sections made and examined under the microscope present miliary tubercles, identical in every respect with those encountered in tuberculosis of the tongue and other parts; besides which tubercle bacilli are also found. In staining tubercle bacilli, a matter which may be referred to in this place, we need two stains—one made by the rosaniline salts, and another which will give a decided contrast. The cover-glass preparation is first stained with rosaniline salts, then decolorized with an acid, which removes the color from everything except the rosaniline-colored bacilli. It is then colored with the contrast stain, methylene-blue being usually used for this purpose, which stains everything except the rosaniline-colored bacilli. With one twelfth oil-immersion the tubercle bacilli are seen as small red rods, while all other micro-organisms are blue. Gibbes proposes a double-stain process, for which great rapidity and the absence of the acid nuisance are claimed. It can be accomplished in four minutes. These two advantages, which it possesses, will be my excuse for incorporating an account of its technique here. In so doing, I quote almost verbatim from Gibbes's last edition (1891) of his work on *Practical Pathology and Morbid Histology.* It is compounded as follows:

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* Read before the San Francisco Bacteriological Society, March 2, 1892.

Rosaniline hydrochloride......	3 grammes;
Methylene blue..............	2 “

Rub them up in a glass mortar until they appear as a fine powder. Then dissolve aniline oil, 5 c. c., in alcohol, 20 c. c., and add slowly to the stain in the mortar and rub up until all the stain is dissolved. Then add slowly, with constant stirring, 20 c. c. of distilled water. Keep in a well-stoppered bottle. The stain being ready for use, it is employed as here described, to wit:

Pour into a thin watch-glass, as it has to be heated, enough stain to float the cover-glass and to cover its under surface; then place a dried cover-glass, *sputum side downward,* on the stain. Seize the watch-glass with a forceps and pass it rapidly through the flame of an alcohol lamp, being careful not to expose it too long to the heat of the flame, as it is likely to break in two and also to burn the preparation. The cover-glass is taken out of the stain and washed two times in two different receptacles, each containing spirit. It contrasts the red-stained bacilli beautifully with the blue-colored micrococci and bacteria. Gibbes claims to have slides made by this process which have lasted years. As many investigators have had some difficulty to find tubercle bacilli in some specimens, any method which facilitates our so doing is worthy of mention, and I therefore transcribe, in this place, the process of Dr. Kronig from a late number of the *Berliner klinische Wochenschrift.* “Dr. Kronig was able to find a considerable number of tubercle bacilli in excess where ordinary methods had failed to reveal them by the employment of centrifugal force in addition to a solution of caustic soda by Biedert's method. The sputum was diluted by caustic-soda solution, then subjected to centrifugal force in a centrifuge for five minutes, at the end of which time a fairly compact sediment separated, in which were found numerous bacilli. The method is much more rapid than Biedert's, where two to three days are required.”

Lupus Erythematodes.

This affection has nothing in common with lupus vulgaris. It is an entirely distinct and separate affection. Lupus erythematodes is a localized inflammation of the corium, sometimes commencing in the deep and at other times in the superficial layers, which leads after an uncertain time to ulceration of the surface. In the May number, 1891, of the *Journal des maladies cutanées et syphilitiques,* Professor Leloir speaks of a disease which he calls erythematoid lupus vulgaris, and whose histology and pathology, he claims, belong both to lupus vulgaris and to lupus erythematodes. As he would have it, a hybrid specimen of these two diseases. Experimental inoculation and bacteriological researches prove to him that it is a local tuberculosis. Dr. Brocq, in the January number of 1892 of the *Journal of Cutaneous and Genito-urinary Diseases,* mentions a case of lupus erythematodes, published by Hallopeau and Jeanselme, wherein the autopsy revealed evidences of pulmonary tuberculosis. Brocq does not think that it proves much in favor of the tuberculous nature of lupus erythematodes. It is nothing more than a coincidence. These views are simply stated, as they may prove of interest. They show nothing as yet.

Leprosy.

Lupus has a number of synonyms, but leprosy not only has as many, but also has had some of them applied to other cutaneous diseases, creating a good deal of confusion in the nomenclature of the subject. The terms *leontiasis, lepra Hebrorum, spedalsked, satyriasis, elephantiasis Græcorum,* and *lepra* have been and are still used to designate it. In Willan's second class of skin diseases lepra, pityriasis, psoriasis, and ichthyosis are found. At the present day the lepra of Willan is considered nothing more than a psoriasis—the circinate form—having no connection whatsoever with what we call true leprosy or lepra. Tilbury Fox dispenses with the term psoriasis and retains the word lepra for the disease known to almost all dermatologists as psoriasis. Sir Erasmus Wilson makes lepra synonymous with true leprosy, and names psoriasis alphos, christening eczema squamosum psoriasis. These statements are necessitated by the fact that many know this disease only under the names given to it by Wilson or Fox and other authors and teachers who have followed the nomenclature of one or the other of the two most authoritative and most widely known writers upon dermatology in the English language in their day. To us who live on the Pacific coast, whose metropolis is the landing-place and distributing point for travelers coming from China and the Hawaiian Islands, where the disease prevails endemically, everything concerning it is of interest. This is my reason for incorporating here some assertions made by Bulkley in a paper entitled The Non-contagiousness of Leprosy, read at a meeting of the New York County Medical Association, held December 21, 1891. Therein he says that there is no warrant for the popular theory that leprosy is contagious, that there is no necessity for segregation, that it is probably due to the presence of a bacillus, and that there is far more reason for placing restrictions about patients with syphilis and tuberculosis than about those suffering from leprosy. Part, if not all, of these conclusions are a rehearsal of a discussion had some little time ago before the French Academy of Medicine. As a bacteriologist, and as one who has given some study to the question, I must most emphatically dissent from any such conclusions. Their acceptance would be fraught with danger to the public health. Bulkley's views are not in keeping with the advances of modern thought and research. If it is justifiable to segregate and to place restrictions about phthisical patients, the necessity of which is recognized by modern sanitary science, why not about leprous? The tubercle bacillus no doubt plays as important a *rôle* in the ætiology and contagiousness of one as in that of the other. It is not only probably due to a bacillus, but *more than probably* caused by the bacillus lepræ of Hansen, the tubercle bacillus found in this disease, to which reference will be made later on. Many authorities divide leprosy into two kinds—the anæsthetic or non-tubercular, and the tubercular. For this classification, it is claimed by gentlemen who have practiced medicine in countries where it is endemic, and who are thoroughly qualified and competent by education and experience, that it is just as correct, or, more properly speaking, incorrect, as the Chinese division into one hundred kinds. The disease may *ab initio* put on the garb of the tubercular or non-tubercular form, but after a longer or shorter time it will assume the signs of both forms. In this disease an increased growth of fibrous connective tissue takes place. Large cells, filled with small bacilli, having the same reaction to staining agents as the tubercle bacilli of Koch, are seen. They are irregularly shaped, and contrast quite strongly with a number of small, round, regularly shaped cells which are also met with. The large cells are connective-tissue corpuscles, the small ones leucocytes. To obtain the bacillus of leprosy, a cover-glass preparation is made by pressing out some of the fluid from the tubercles or ulcers of a living leper or from the tissues post mortem. It is then dried on a cover-glass and prepared in the same manner as the tubercle bacillus, the double stain of Gibbes being also applicable here. Dr. G. A. Hansen, assistant physician at the leper asylums, Bergen, Norway, discovered the bacillus lepræ in 1880. Hansen, Neisser, Thin, and others have shown that this bacillus is found in the granulation tissue forming the tumors and in the cells of the nodules. The granulation tumors are chiefly found in the skin, mucous membranes, and in the interstitial connective tissue of the nerve fibers. By separating and compressing the nerve fibers they interfere with their functions and nutrition, leading to anæsthesia and gangrene, finally causing the fingers and toes to drop off.

PEMPHIGUS.

Some have supposed that pemphigus might recognize as an ætiological factor some particular micro-organism. The fluid contained in the bullæ has been utilized for the purpose of making cultures of the supposed micro-organism. Failure has been the lot of most of those who made these attempts. The erudite and skilled president of this society, Dr. S. M. Mouser, informs me that in a case of this trouble, which was under his professional care, he made many trials, and that, with the utmost of care, with negative results. Those who succeeded did not produce identical cultures. Bacteriology has, as yet, shed no light upon it.

FAVUS.

At the International Congress of Hygiene and Demography, held in London last year (1891), Dr. Kral, of Prague, in the Section of Bacteriology, showed the real *Achorion Schoenleinii*, with a new method, which allows the isolated growths of single germs of favus and similar diseases.

ALOPECIA AREATA.

The so-called *Microsporon Audouini*, first described and named by Gruby in 1843, was, and still is by many in France and England, regarded as being the cause of alopecia areata. On this account it is relegated in some textbooks to the parasitic affections. The majority of those qualified to judge consider it a trophoneurosis. It is non-contagious, notwithstanding the fact that some writers would adduce evidence going to prove its contagiousness by citing two cases occurring in the same family, with as much reason as if two members of the same household were attacked one after the other by an ichthyosis, eczema, lichen, erythema, or any other non-contagious integumentary trouble; it can not be inoculated, and predominates in those of a nervous temperament. Even those who would have it a parasitic disease are forced to admit that they can not demonstrate the microsporon as it was taught to exist by Gruby and Bazin. It has also been shown to be present on the heads of those not affected with the disease. One of my most illustrious and learned teachers at the Hôpital Saint-Louis, Paris, France, Professor Lailler, who was a stanch advocate of the parasitic theory of the production of the disease, admits in his treatise on the tineæ, published a few years ago, that you can even find what is called the *Microsporon Audouini* on the heads of those afflicted with pityriasis, and also in cases where the subjects are free from every vestige or trace of cutaneous trouble. So frequently is this the case that some French writers have called it "l'hôte habituel de toutes nos têtes." Under these circumstances how can it be asserted to be the cause of this affection? Thin has discovered, in the scales and hairs of those suffering from this disease, bodies having the properties of and resembling bacteria, and to this organism he has given the name of *Bacterium declavans*. Let us hope that continued research, with improved methods, in the domain of histology, pathology, and bacteriology may solve this *questio vexata*, and that the credit of having done so may revert to a member of the San Francisco Bacteriological Society.

116 GRANT AVENUE.

THE TREATMENT OF NASAL STENOSIS BY MEANS OF A NEW INTRANASAL TUBE.

By PETER J. GIBBONS, M. D.,
SYRACUSE. N. Y.

Nasal intubation is, no doubt, one of the oldest mechanical devices in the medical profession. We find Hippocrates criticising the methods used before his time in the treatment of fractures of the nose. He then describes spatulæ, also Carthaginian skin, and porous material—such as caddis and sponges—for the purpose of correcting the deformity resulting from injury and for retaining the parts in position, and at one time he used "a slice of sheep's lung as it happened to be at hand."

His object (*On the Articulations*, verse 37) was to reduce deformities caused by fracture, and to maintain the parts in the corrected position. His own words are: "At first, then, by rectifying the parts from within, and sparing no pains upon them from without, they are brought to their natural position and set."

Then he describes his method of retaining the parts by "inserting Carthaginian leather, molded into a shape suitable to the place into which it is to be introduced." Again (*The Mochlicus*, verse 2, Fractures of the Nose) he speaks of molding "Carthaginian hide, or anything else which does not irritate."

Galen, commenting upon this treatment, remarks that "the spatulæ used by Hippocrates were of all shapes and sizes to suit for a variety of purposes." We find in more modern works that a female catheter is recommended to take the place of the spatulæ, and I have no doubt but what these spatulæ were so shaped that, besides elevating the depressed fragments and retaining the proper shape of the cavity of the nostril, they also answered as conductors for the free passage of air through the nasal chambers.

Since the adoption of the female catheter as an instrument by means of which air or food can be forced through the nasal cavities, we have never improved upon the principle, for while the tubes differed in shape or material, respiration was still carried on by breathing the air through a tube with impervious walls which did not allow of any physiological action of the mucous membrane of the nasal cavities upon the air inhaled.

Nasal respiration performed in this manner is not equal to mouth-breathing, for in the latter instance a certain amount of physiological action is exerted upon the inspired air by the lining membrane of the mouth. The air thus breathed is both warmed and saturated, to a certain extent, with watery vapor, and much of the dust and other foreign matter floating in the air is removed by adhering to the moist mucous membrane. At the same time we do away with the annoyance of a foreign body in the nasal cavity.

If we are going to use a tube in the nasal cavities, let us have it made up on a physiological basis.

Nasal respiration is not normal unless the following conditions exist: First, the nasal passages must be free; second, during inspiration and expiration the air must come in contact with the mucous membrane; third, the mucous membrane itself must be in a normal state. When these conditions are present the normal physiological action of nasal respiration can be carried on.

Now, to restore an abnormal nostril to a normal state, we must try to restore the three conditions mentioned above. Therefore we must first remove all abnormal growths or deformities by such methods as are advised by Bosworth, Jarvis, Sajous, Solis-Cohen, Seiler, Mackenzie, Roe, Beverley Robinson, *et al.*, by mean of the saw, electric cautery, snare, drills, chromic acid, etc.

If, after performing the operations which seem to be indicated to restore the patency of the nasal passages, we do not get immediately a free current of air through the nose, we should insert some mechanical device that will overcome the existing nasal stenosis. Now, this tube, or any other mechanical device, must be so constructed as to maintain the patency of the nasal passages to such an extent as to allow the free entrance of the amount of air required to carry on respiration.

To have normal respiration, we must have the air enter the lungs in as normal a state as possible; therefore we must construct our tubes or device in such a manner as to allow the air to come in contact with the mucous membrane of the nasal cavities, so that the physiological action of this membrane upon the air may take place. Also, our device must not, while in position, prevent local applications being made to the nasal mucous membrane, nor must it interfere with the natural discharge of the secretions of the parts.

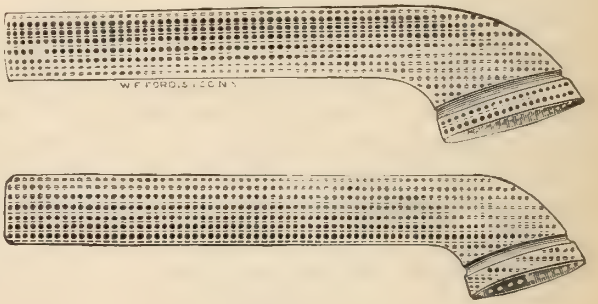

Fig. 1.

I here present to the profession a device, as seen in Fig. 1, which I believe accomplishes as much of the above requirements as can be accomplished. It consists of a tube, made of any suitable material, such as aluminum, silver, gold, rubber, etc. I prefer metal, as it will dilate and maintain the caliber of the nasal cavities. The walls of the tube are filled with minute perforations which permit the air, during inspiration and expiration, to come in contact with the lining membrane of the nasal chambers. In doing so, it allows the membrane to carry out its normal physiological action, and by this means we get so much nearer a normal respiration.

I find, from experience, that the metal tube, perforated, causes less inconvenience than the same tube, or a rubber one, not perforated. I also find air containing dust, or any irritant, inhaled through the tube not perforated, acts more as an irritant upon the lungs than the same kind of air inhaled through the mouth; and such air inhaled through the mouth is more irritating than when inhaled through the perforated tubes.

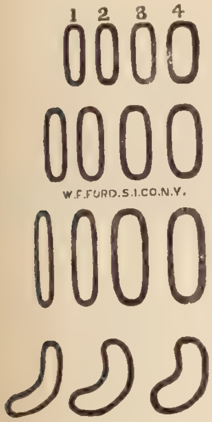

Fig. 2.

The tubes are made in two forms, flat and crescentic; there are fifteen sizes, as seen in Fig. 2 (1, 2, 3, and 4), corresponding to the sizes and shapes of the nasal bougies mentioned by Sajous. These tubes can be used as nasal bougies, if desired. We can also use them in epistaxis, instead of anterior and posterior plugging, by means of a method which I will explain later.

Soft-rubber tubes collapse and do not allow the air to pass freely, and when a patient can breathe through his nasal cavities with the soft-rubber tubes in position, the same patient can breathe better when the tubes are removed, for I find that it requires a material with more resistance than soft rubber to maintain the desired patency of the nasal passages.

The shape of the soft-rubber intranasal tube ordinarily used favors its collapse. Round rubber tubing is not so likely to collapse. To obviate this difficulty, I introduced into the rubber tubes a small device on the principle of Otis's urethrometer, or the bristle probang, and a spiral spring. When the force required to keep the tube open was obtained in this manner, it was found that the instrument was cumbersome, and finally it was decided to make the tubes of metal instead. Not only could sufficient strength be obtained in this way, but these tubes could be perforated, thus permitting the air to come in contact with the nasal mucous membrane. Rubber tubes could not be perforated without danger of weakening them. Woven-wire tubes were also used, but were found to be more irritating and expensive.

The nasal intubation tubes are most valuable, as affording relief in the nasal stenosis of hay fever, and especially are indicated whenever we have nasal stenosis that is not overcome immediately by constitutional, local, or operative treatment, let the cause of the stenosis be what it may. We are sure that we can get a free passage of air by means of the tube when we can not accomplish it in any other way. In the tube we possess a valuable device, and with it, in conjunction with medicinal and operative treatment, we can cure diseases that we were unable to cure in the past. This is true, especially in asthma and hay fever, which I believe can positively be cured by one or more of the drugs which we now possess, or by operative interference, or by using the tube, or it may be necessary to resort to two or even the three measures combined to cure some of the cases we meet with.

When using the tube to overcome stenosis, I usually weave a fine sieve of silk or woolen thread in the smaller or posterior end. This may be made as fine or coarse as required by passing the thread from one hole to another on the opposite side of the tube as many times as may be necessary, as seen in Fig. 3. When we use the device in a case of hay fever, we also put a thread sieve in the larger or anterior end. Over this end I find it convenient to have a short, perforated cap, as seen in *g*, that will fit over the anterior end of the nasal tube, and, by putting the sieve in this end cap, we can readily remove it while making local applications. I believe, by having the sieve in this end, we can prevent pollen or germs from entering the nasal cavities. I advise two anterior end sieves for each tube. The extra one should be kept in an antiseptic solution while not in use. We should change the anterior sieve night and morning, or more frequently if we see fit. We should also frequently replace the thread, making a new sieve two or three times a week.

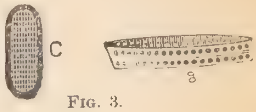

Fig. 3.

To insert a tube, the nostril is first sprayed with a twenty-per-cent. solution of cocaine. (I prefer from a ten-per-cent. to a twenty-per-cent. solution in all work upon the *nose* to weaker ones, as the local effect is obtained more quickly and better, and without any more danger than with the weaker solutions. Dr. Bosworth first called my attention to this fact.) Satisfying ourselves that there are no obstructions in the nasal cavity, we insert the tube, which we have previously immersed in carbolated vaseline. After the tube has been placed in position, the patient is directed to cleanse the nasal cavities as often as necessary with any disinfectant we deem fit to advise. For moistening the sieves, I prefer a glycerin solution made with Seiler's antiseptic tablets, one tablet to the ounce of glycerin. The glycerin adheres to the thread sieve, and by doing so collects the foreign bodies from the air. I also give the patient a four-per-cent. solution of cocaine, which he may use, providing there should be any irritation.

The tube being perforated, all local applications can be readily made by means of a spray or a cotton-tipped probe, without the removal of the tube, it being only necessary to remove the anterior sieve.

We should see our patient two or three times during the first twelve hours; afterward, as often as we think proper. Before removing the tube, we should make an application of a solution of cocaine. The patient should be directed to spray the nostrils with a solution of cocaine, if he should ever desire to remove the tube, which he can readily do after one or two insertions.

In epistaxis, when using this device instead of anterior and posterior plugging, the metal tube is to be covered with pure rubber tubing such as can be obtained from any instrument manufacturer.

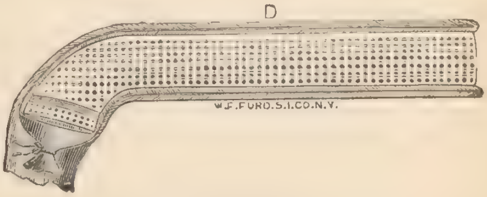

Fig. 4.

To put the soft-rubber tubing upon the intranasal tube in a proper manner, we immerse the metal and rubber tubing in vaseline. The rubber tubing should be three times as long as the nasal tube. Then pass the rubber tubing through a round metal tube, as the rubber tubing appears at the other end of the metal tube; it is reversed backward upon this until the metal tube is covered, or one half of the rubber tube is reversed upon the other half. When this is accomplished, we withdraw the metal tube. Then we pass the posterior or smaller end of the nasal tube into the inner rubber tube until the rubber tubing covers the metal one, with the two ends of the rubber tubing projecting over the anterior end of the metal tube. Then tie a ligature of any material around the end of the inner rubber tube, as in Fig. 4. The outer end of the rubber tube is then passed over the nozzle of a Davidson's syringe. The nasal tube, covered with the rubber in the manner already described, is then passed into the nasal cavity and the rubber tubing is inflated with air, or hot or cold water, by means of the syringe; when inflated sufficiently, a ligature is passed tightly around the rubber tube above the opening of the intranasal tube and tied securely; the two ends of the rubber tubing are then cut off. The rubber, being inflated, will come in contact with the bleeding surface, and, by doing this, it arrests the hæmorrhage without arresting breathing through the nasal cavity. The patient is then rendered more comfortable than when anterior and posterior plugs are inserted. Of course, we get no physiological action of the mucous membrane upon the air, but, by means of the moistened sieve in the tube, we may moisten the inspired air and remove foreign bodies from it.

The metal tube, covered with rubber, is also a convenient means of obtaining pressure in any direction for the correction of deformities in fractures, etc. To get pressure at one particular point, we should pull over the metal and rubber tubing, arranged as described for the control of epistaxis, another piece of rubber tubing that has a hole in one side, as in F. This will allow dilatation of the distended tube at the required point only; the principle being the same as when a localized lesion of the arterial coats results in an aneurysm.

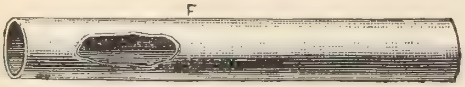

Fig. 5.

A female catheter or a small tin tube, such as is often used on a lead-pencil to hold the rubber, or a piece of a paper-wad thrower, such as is used by the small boy, will answer to cover with the rubber tubing for the arrest of epistaxis or for correction of deformities.

I trust the method I have laid down in detail will succeed as well in the hands of others as it has done in mine, providing it be carried out with conscientious exactness and persisted in by the physician as well as by the patient.

If instrument manufacturers will send to me the first one they make, I will approve or point out the defects and return the same. By doing this, it will prevent the great deviation we so often see in instruments supposed to be the same.

324 Warren Street.

A REPORT OF SURGICAL CASES.*

By DONALD MACLEAN, M. D.,
DETROIT.

I have selected for your consideration a few cases which have occurred in my practice recently, and which I venture to hope the members of the Section will find to contain suggestions of practical interest. My aim has been to divest my paper of all the lines and limitations suggestive of specialism, and to make it, if possible, acceptable and useful to the ordinary every-day practitioner of common-sense surgery.

Case I.—The first case is especially interesting, from the fact that the patient was under my personal observation from the very inception of the disease to its fatal termination, covering a period of more than twelve years. In other respects, also, it is a remarkable case, and, in my opinion, well worthy the thoughtful attention of the members of the Section. J. R., aged thirty-eight, of Adrian, Mich., first consulted me in October, 1879. He was then a strong, vigorous, apparently perfectly healthy man, but complained of a swelling of the right submaxillary gland, about the size of a medium-sized peach, not painful, quite disconnected with the jaw, and freely movable. At that time I took a favorable view of the case, and prescribed some local absorbents. Before very long, however, the movable swelling became immovable and undefined, and intimately related to the inferior maxilla. Moreover, it grew rapidly and affected his general health to a marked extent. Early in February, 1880, he presented himself at my public clinic at Ann Arbor, and the tumor was then as large as a small cocoanut, and completely enveloped the right half of the lower jaw. Moreover, it dipped deeply into the deeper tissues of the upper triangle of the neck, and was very closely related to them, so that it was hardly possible to define the limits of the growth.

The patient experienced considerable difficulty in eating and swallowing, and his general health had evidently suffered very materially.

The removal of the tumor, along with one half (the right) of the lower jaw, was advised, and at once accepted by the patient.

The operation was performed on February 10, 1880, and was a difficult and bloody procedure, but was accomplished with safety to all the important structures. He made a rapid and complete recovery, and was dismissed cured on the fifteenth day—viz., February 25th.

On May 5, 1880, he returned to the clinic to report, and the result seemed all that could be desired. The further history of this case is briefly as follows:

He completely regained his health and strength; his weight increased from 130 to 190 pounds.

In my occasional visits to the city of Adrian during the years that followed, I very often heard of, and frequently saw, this patient, and he was always *well.* Whether any microscopical examination of the tumor was made at the time, I am not now able to say, but its mode of inception, its rapid growth and involvement of surrounding textures, as well as its appearance to the naked eye, all conspired to make me very guarded in my prognosis in that respect, and I experienced a feeling of relief as the years passed by, and there was no return, and the patient's general condition continued to be good.

In August, 1890—that is, more than ten years after his operation—patient for the first time began to complain of soreness in the throat, which was easily and promptly relieved by a simple gargle. After that he remained well until April, 1891, when he again complained of soreness, and said that it hurt him to swallow.

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* Read before the Michigan State Medical Society.

He continued to work, putting up wire fences, until May 4, 1891, when he had a severe hæmorrhage from the throat, which had the effect of relieving the pain, but ulceration soon followed and extended to the root of the tongue, and later into the remaining portion of the lower jaw. After August, 1891, he was unable to swallow anything solid, and lived entirely on liquids, which he swallowed with great difficulty and pain. He grew gradually weaker and more emaciated, and finally sank, and died exhausted on January 6, 1892, being nearly twelve years after my operation.

The remarkable points in this case appear to me to be—

1. The inception of the disease in the submaxillary gland.
2. Its rapid extension to the jaw.
3. The long immunity from return.
4. The fatal return of the disease after twelve years.

Case II. The following case seems to me to deserve respectful consideration, because, in the first place, it is typical of a class of cases which are by no means uncommon, and, in the second place, because the true nature of the ailment is very frequently overlooked and the treatment correspondingly futile and unsatisfactory. I will permit the facts of the case to speak for themselves.

Early in January of the present year a well-known gentleman of Detroit brought his sixteen-year-old son, J. D., to me for advice. The father informed me that his boy's nervous system seemed to be utterly destroyed. He suffered from insomnia, loss of appetite, great depression of spirits, and utter want of energy and of confidence in himself. He avoided society of all kinds, especially ladies', and could with the utmost difficulty be induced to go out of the house for even a short walk. The father also informed me that he had taken advice and treatment from at least half a dozen doctors, each one of whom, I may tell you in confidence, is a member of this society, and gentlemen who stand in the first rank of the profession in Detroit. The instant the anxious father had finished his tale of woe I turned to the boy and requested him to open his clothes freely and permit me to examine him. I then called his father's attention to two things—viz.: 1st, a very well marked case of phimosis preputialis; and, 2d, an abnormally long and lax scrotum which permitted the testicles to hang very low down (almost half way to the knees), and which really afforded those glands little, if any, support.

I ventured to assure the father and the patient in pretty decided—in fact, I might say, positive—terms, that these two conditions together constituted the real cause of his general state of nervous debility, and I urged immediate operation to relieve them.

The father seemed to be favorably impressed with the position I had taken, and left my office with expressions of gratitude on his lips. Days and weeks passed away and I heard no more of the case. On February 19th, however, I received a telephone message from the father to come next morning prepared to do what I had advised. I did so, taking Dr. W. G. Henry and my assistant, Dr. F. B. Tibbals, with me.

The father then explained the delay as follows: First, the mother's scruples had to be overcome. Second, the physician who had recently had charge of his case, and for whom I can truly say I have the greatest respect, professionally and otherwise, was lacking in faith as to the correctness of my theory and the wisdom of my practice. He declared his preference for putting the patient through a long and thorough course of medical treatment. At last, however, he consented that the operation should be performed, with the understanding that after recovery from the effects thereof he was to have charge of the long course of medical treatment, which he felt confident would still be required.

Chloroform having been administered, I first circumcised him. I then removed a very large section of the elongated scrotum. These procedures were attended with very little shock, and no pain or trouble of any kind afterward.

Healing took place, as usual in these cases, very rapidly. On Sunday last, May 1st, I interviewed both father and son together, and was assured by both parties that there had been as complete a transformation in the patient's condition as anybody could imagine or desire. On the day previous, Saturday, April 30th, he had ridden thirty miles on his bicycle without fatigue. He sleeps all night. His feeling of timidity and want of confidence has disappeared. He enjoys the society of young men like himself, and even goes out calling on young ladies.

If this were a unique case there might be grounds to suspect that it was simply a case of coincidence, or of faith cure; but my own experience in a large number of very similar cases is sufficient to convince me that the comparatively trivial operations which were performed, and the gratifying results obtained, stand to each other in the relation of cause and effect.

Case III.—On January 4th of this year Miss P. A., aged twelve years, was admitted to Harper Hospital under my care with the following interesting history:

At the age of two years she fell and dislocated her right hip joint. The dislocation was reduced by Dr. Burrows, and all went well for three months, when she began to suffer severe pain in the hip and became very lame. She was then taken to Ann Arbor, and, in my absence, consulted Dr. Frothingham, who diagnosticated disease of the hip joint, and advised rest with extension. In a few weeks Dr. Frothingham's advice was abandoned and matters permitted to take their course until the spring of 1883, when Dr. McGraw and Dr. Boice were consulted. An extension splint and crutches were prescribed by these gentlemen, but after eight months of this treatment the friends became discouraged and abandoned it. They then took the child to Toronto, where the treatment seems to have consisted solely in massage, which, it is claimed, afforded relief.

In October, 1883, electricity was used, and this also afforded relief for the time being. Following this, her parents were persuaded to take her to a layer-on-of-hands, who treated her for a year and a half, after which, it is stated, her pain ceased entirely. One year ago she was taken to a notorious institute at Indianapolis, where she stayed for six months at an expense of $1,200. There she was fitted with a so-called brace, which I have seen, and which was heavy and clumsy enough to have restrained the most violent criminal, but which could not possibly affect in any way the solidly ankylosed hip joint which constituted the sum totum of the patient's case.

When she came into my hands she was a perfectly healthy and uncommonly strong, well-developed girl. Her right hip joint was ankylosed at a right angle, and she could not get about except with crutches.

My treatment consisted in sawing through the femur just below the great trochanter and then treating the case like an ordinary one of compound fracture.

On February 4, 1891—that is to say, just one month after her operation—she was discharged cured, and her present condition will be best appreciated by an examination of the little patient, who has kindly come here for that purpose.

Case IV.—T. B., aged fourteen, a newsboy, whose home is at Negaunee, Mich., last September had the good fortune to come in contact, accidentally, in a business way, with that big-hearted philanthropic humanitarian, General R. A. Alger, who at once became interested in the boy on account of his great deformity and lameness, and took immediate steps to put him in the way of receiving such aid as surgery might be able to afford him.

Early in October he came to Detroit, where I was asked to examine him, and to do whatever I thought best in the way of treatment. I found him a well-developed and very healthy-looking lad, suffering only from the effects of an abscess in the left hip, which had left that joint completely ankylosed at a right angle, so that he was entirely dependent on his crutches for locomotion. The history of the abscess, which terminated so unfortunately, was peculiar. At the age of eight, patient received a comparatively slight injury to his right foot, near the ankle joint.

In some way this wound seemed to have become infected with septic poison, and patient suffered from general pyæmia, with multiple abscesses in many regions of the body.

From this dangerous condition he managed to recover entirely, and with no apparent bad effects, excepting only his left hip, which was allowed to become fixed in the position in which I found it, and which made his limb a useless and dangerous deformity. On October 7, 1891, at Harper Hospital, the patient being under chloroform, I first divided subcutaneously the tendons of the following muscles: tensor vaginæ femoris, the sartorius, and the rectus femoris.

I then made a straight incision down to the trochanter major, sawed through the femur at that point, and found it necessary to excise at least two inches of the shaft before I could bring the bone down to its natural position. This was satisfactorily accomplished, and the wound accurately closed by interrupted sutures, and extension by Buck's method applied.

The remainder of the history is simply one of uninterrupted recovery. The wound healed by the first intention, and the patient suffered neither pain nor fever during the process, and he was dismissed from the hospital, walking on his crutches, but able to lean a good deal of weight on the injured limb, on October 27th—that is, seventeen days after his operation.

Since then he has been actively employed in his business as a newsboy, besides doing all he can to induce his friends and neighbors to accept his views on the question of the approaching presidential election.

I am very glad to be able to present him in person. On examination, it will be seen that he has a very perfect and freely movable new joint at the point of exsection, and that his limb, although a little shortened, is nevertheless strong and useful.

These two cases were to illustrate the two different results which may be aimed at in cases of this kind—namely, first, a straight limb with a movable false joint; and, second, a straight limb with no joint at the hip, either result constituting a great improvement on the pre-existing condition of ankylosis in the rectangular position.

Of a considerable number of laparotomies performed within the past twelve months for a variety of affections, the following is, in one respect, the most interesting, as it is, so far as I know, the first successful case of cholecystotomy ever performed in Michigan:

Case V.—Mrs. A. M., of Butler, Ind. Patient has never been robust, and has always suffered from sick headaches. She has also suffered from ague. Since the age of eighteen she has been persistently drowsy—in fact, could go to sleep any time. Three years ago was taken with intense pain in region of liver and gall-bladder, which continued for two weeks. Fly blisters being applied afforded relief. Two years later had another attack, and on that occasion pus and blood passed freely from the bowels. Has had pain in region of the gall-bladder ever since, and at times an undefinable swelling could be felt by herself, as well as by Dr. Fanning, her physician, who finally called me to Butler to see her last June.

I found her very much emaciated, pale, and cachectic-looking, with rapid pulse and great depression of spirits, and anxious to submit to anything which seemed to hold out any hope of relief. At this time I could hardly distinguish any swelling at all. Nevertheless, I thought an exploratory operation justifiable, and induced her to come to Detroit for that purpose. On June 27, 1891, assisted by Dr. F. Huson, Dr. McGraw, Dr. Longyear, and Dr. Henry, I cut down and found the gall-bladder very much enlarged and its coats very much thickened, and the presence of calculi could quite easily be felt through the bladder wall.

I then stitched the serous covering of the gall-bladder to the edges of the abdominal wound very accurately, and then I opened the gall-bladder and extracted twenty-six biliary calculi, which I herewith show you. The gall-bladder was then thoroughly douched out with a solution of boric acid, a drainage-tube (glass) inserted, and an ordinary dressing applied. The discharge of bile through the tube was very free. The stools were clay-colored. Pulse between 70 and 80, and temperature subnormal for two weeks after the operation. At the end of the first week a free hæmorrhage took place from the gall-bladder, which was suspected at the time to have resulted from the pressure of the glass drain tube, but that is a matter of conjecture.

The tube, however, was removed, and a temporary tampon had the effect of permanently arresting the hæmorrhage.

Patient returned to her home at Butler on August 1st much improved in health. The ultimate result is well set forth in the following letter from her physician:

"Dr. Donald Maclean, Detroit, Mich. Dear Doctor: Mrs. Maxwell died from congestion and severe hæmorrhage from the kidneys on December 7, 1891. I should have notified you of the occurrence at the time, but failed to do so.

"This last sickness was brought on from exposure to cold and stormy weather. Went to a wedding six miles in the country and came home in the night through a storm. Took cold, from which she did not recover. Was sick about ten days.

"The result of your operation was all that could be expected from so severe a difficulty. The sinus from the gall-bladder remained pervious, though very small, until her death. It continued to discharge bile and nothing else, except at times when the liver would become torpid. When she would complain of this, a few doses of calomel would right matters immediately.

"Yours respectfully, F. W. Fanning."

The next case I have to report here is one of a peculiar fracture of the lower jaw, caused in a peculiar way, and met by peculiar treatment.

Case VI.—W. M., aged forty-five, of London, Ont. While walking along on the sidewalk on the evening of February 27, 1892, he was struck in the face by the stick of a sky-rocket, which had accidentally exploded, along with a lot of other fireworks, which a man was conveying in a cab, to a convenient spot for holding a political demonstration. The stick had plowed along through the earth for at least one hundred feet before it reached Mr. M., when it took an upward course, and struck him in the face, fracturing his lower jaw in two places, laying his face open by a ghastly lacerated and contused wound, which commenced about an inch below the angle of the mouth, laying that cavity open, and extending deeply into the tissues at the back of the neck, where it became firmly imbedded. I here show you the identical piece of wood, which you will observe is five inches and a half in length and half an inch by a quarter of an inch thick.

It was at once extracted, and the cavity douched out by Dr. Woodruff and Dr. Wishart, of London. These gentlemen also made an effort to fix the fragments of the jaw by wiring them together.

In spite of everything that they could do, the central fragment continued to become displaced. A great deal of inflammatory action, accompanied by general constitutional disturbance, was developed, and on February 4th I was called to see the case, along with his attending surgeons.

I found him suffering very much from the mobility of the central fragment as well as from the foul suppurating wound of the face and neck, the admixture of the saliva with the suppurative discharge combining to furnish a very copious flow of very putrid fluids. In order to make a satisfactory examination, chloroform was administered, after we had received the patient's authority to do whatever we thought proper.

The loose central fragment extended from two inches in front of the angle of the jaw on the left side to two inches beyond the symphysis on the right.

The difficulty, or rather impossibility, of keeping it in anything like a proper position seemed to depend upon the uncontrollable movements of the muscles of the left side of the jaw, temporal and pterygoid. On close inspection, it was also found that at the seat of fracture on that side the periosteum was entirely removed on both anterior and posterior surfaces, so that union at that point seemed entirely out of the question, and as the ramus of itself seemed to have no further possibility of usefulness, I proceeded at once, with the full consent and approval of my *confrères*, to disarticulate it—no easy matter in the swollen and changed condition of the structures involved. The internal maxillary was ruptured in the later steps of the process of disarticulation, but was at once secured by a pair of Péan forceps, which were left *in situ* for forty-eight hours, and which acted efficiently as a drain as well as a hæmostatic. The remainder of the central fragment was then wired as firmly as possible to the right segment of the jaw, and the necrosed margin on the left side was removed by the saw. The soft parts were then trimmed up as well as possible with the scissors, and drawn together with interrupted sutures of silkworm gut. About a month later I saw Mr. M., and found his condition greatly improved.

The vast gap in the soft parts was closing up satisfactorily, and the loose fragments of the bone gave signs of becoming united to the main part of the jaw in good position.

In a letter dated May 1st, Dr. Woodruff informs me that the wounds in the soft parts have almost entirely closed up, the fracture is uniting, slowly but surely, and the patient is in excellent health and spirits. I here show you—

1. The ramus of the jaw with the necrosed portion, clearly marked out at the seat of fracture.
2. The necrosed edge of the loose fragment.
3. The stick of the rocket which inflicted the injury.

I should say, in conclusion, that the advice and assistance of a skillful dental surgeon were invoked at our preliminary consultation, and he also agreed that nothing safer or better could be done than the course which was pursued, and which, so far as I am aware, was without a precedent.*

Notwithstanding all that has been clearly demonstrated by the experience and teachings of able surgeons all over the world, it is a sad fact that, from some inexplicable cause, anal and rectal affections continue to be, to a great extent, an opprobrium of surgery and a rich field for the empiric and the pseudo-specialist. The belief is deeply seated in the public mind of this country, at any rate, that this class of diseases is not efficiently treated by the regular profession.

I have sometimes suspected that one reason for this unfortunate and discreditable state of affairs is the facility with which otherwise cautious and thorough diagnosticians jump to conclusions in cases of rectal or anal disease without first making an exhaustive personal investigation for themselves, taking the patient's statements and then prescribing in a more or less routine manner.

It might be going too far to lay down an absolute law of practice that every suspected case of disease in this region should be examined with the aid of an anæsthetic before any opinion is given or any treatment suggested, but I am convinced that such a law would be an improvement on the present perfunctory manner of dealing with such cases.

A gentleman once sent for me to prescribe for what he called piles. I made a personal examination, and at once, with my finger, extracted a sharp fish-bone, which was pretty thoroughly imbedded just inside the verge of the anus, thus instantaneously affording him relief which pounds of so-called pile ointment could not possibly have done.

I might cite many such instances, but will close the subject, and my already too long paper, with the following case:

Case VII.—T. B., aged thirty-five, a merchant, married. Family history good. Patient states that fifteen years ago he began having trouble with hæmorrhoids, from which his family physician afforded him only temporary relief. About two years and a half ago he began to have hæmorrhage from the anus, with violent straining and protrusion of the rectum to the extent of three inches and a half. This protrusion and bleeding occurred with every effort at defecation. Sometimes he managed to return the protruding mass himself, but frequently had to obtain the aid of his physician. In December, 1890, patient states that he was operated upon for hæmorrhoids, at Harper Hospital, but without material relief. He continued to suffer and grow worse until March 22, 1892, when he consulted me in my office.

He was emaciated and sallow, his back was bent, and he walked with great difficulty, owing, he said, to the great pain in the region of the rectum.

He went to the Detroit Sanitarium, where, on the following morning, with the assistance of Dr. Mann, Dr. Tibbals, and Dr. Courtney, I examined him under chloroform. Upon opening the anus with the speculum, several deep and gnawed-out-looking ulcers were distinctly visible. On touching these sores, the most violent propulsive action of the rectum came on, and the protrusion of which patient had spoken was plainly demonstrated.

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* On June 2d Mr. M. called at my office in excellent health, and with very little deformity, although the union of the fragments was not very firm. Dr. W. E. Rice, dentist of this city, applied a gold splint, which most effectually fixed the fragments.

I applied fuming nitric acid freely to the ulcers, protecting the surrounding tissues with absorbent cotton and vaseline. I ordered him to be left in bed and to have daily injections of iodoform emulsion.

On March 28th patient was much better, and the treatment was again applied under chloroform. On April 8th he was able to submit to an examination and to the treatment with the acid without chloroform. The protrusion of the rectum had stopped by this time. He had grown fat and looked the picture of health, and, considering himself cured, insisted upon returning to his home at Au Sable, Mich.

ASTIGMATISM:

ITS LOCATION AND DETECTION.

A CLINICAL LECTURE
DELIVERED AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL.

By FRANK VAN FLEET, M. D.

I PRESENT to you for consideration this morning Mamie J., who was referred to us for examination from the department of nervous diseases, with the following history: Patient has always had convulsions. When three years of age she fell from the window and sustained a fracture of the skull. She was trephined in the left parietal region, the hole of which you can now feel. Patient has had epileptic seizures ever since, both *petit* and *grand mal.* She also has hemiplegia of the right side. Our examination reveals the following: Patient is well nourished. This is important. One's general muscular development is an important factor in overcoming refractive error. The expression of the face is not intelligent—in fact, is rather stupid. Another point to be borne in mind: People with refractive errors which they are unable to overcome, or which they overcome only with the greatest difficulty, are apt to be below the average in intelligence. This is a rule to which there are some striking exceptions, but as a rule it holds good, and is an important fact, and one we should never lose sight of, as it has a most important bearing on the education of the young.

The patient's face otherwise looks normal, and there is nothing to call especial attention to her eyes except the fact that she is wearing glasses.

We will first of all see what they are. Moving them in front of our eyes, we find that objects viewed through them seem to move in a direction opposite to that in which the glass moves. This tells us that we have a convex lens. And as the object seems to move equally in all directions, we know that we have a spherical lens. We find that a spherical concave of 2 D. exactly neutralizes it. Therefore this patient is wearing a convex 2 D. spherical before each eye.

This would indicate that she is hypermetropic, because, as you know, the acceptance of a convex glass for distant vision is only possible with hypermetropia. If we remove the glasses we notice immediately that she has a peculiar feature, suggestive of myopia, because it is a habit myopes have, and from which the name itself is derived. I refer to the nipping of the eyelids, or narrowing of the palpebral orifice.

We find in consequence of this that the patient's visual field is narrowed, which is not the case when her eyelids are opened wide.

Let us now proceed to our examination as we would in any ordinary case. We will go over the ground together, and afterward discuss the result.

First, the ophthalmometer. You have all been taught how to use this wonderful instrument, and it is not necessary that we should here enter into any explanation of it.

We find the mires line horizontally, giving us our primary axis. We expect, therefore, to find any astigmatism that may exist by turning the bar 90° from this point. Turning to the right, we find with the bar vertical that the mires still line and overlap in the right eye one step and a half, giving us 1·50 D. astigmatism with the rule.

In the left eye we find also astigmatism with the rule, but overlapping two steps, indicating 2 D.

This indicates that between the two meridians there is a difference of 1·50 D. in the right eye and 2 D. in the left.

Being with the rule, we know that the meridian of greatest refraction is vertical and is to be corrected by a plus cylinder at 90° or a minus cylinder at 180°.

This much accomplished, we make use of our ophthalmoscope to determine whether this is hypermetropic or myopic astigmatism. If we employ retinoscopy, we find, with the concave mirror, that the shadow moves against the glass in all directions. This implies that we have hypermetropia. Approaching the eye, we find that the strongest convex lens with which we can clearly see the details of the fundus is + 4 D. in the right eye and + 5 D. in the left. Therefore we have a case of compound hypermetropic astigmatism. Seating the patient now at twenty feet from the test type, we find that she has in the right eye V. = $\frac{20}{40}$, and with + 1 D. c., ax. 90°, V. = $\frac{20}{30}$ +.

Left eye V. = $\frac{20}{70}$, and with + 1·50 D. c., axis 90°, V. = $\frac{20}{30}$ +. Convex spherical lenses do not improve. The question as to whether I ought to give her spherical glasses in addition to the cylinders I shall leave to some future time to decide. I shall say in this connection only that at her age, which is seventeen years, with good ciliary muscles and her astigmatism corrected, she may be able to get along with cylinders alone. At any rate, I shall correct her astigmatism only for the present, and we will keep her under observation and note the result. In this connection I would refer you to a paper lately published by Dr. Roosa on this very subject.*

Nor do I propose to enter into consideration of her error of refraction being a possible cause of a reflex neurosis. That we will leave to the nervous department, having the knowledge that if it is the cause of her nervous condition, we have put her in the best possible condition to derive whatever benefit may be possible to her.

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* *Medical Record*, March 26, 1892.

I want you to especially observe and remember the great facility with which we now accurately fit this class of patients with the instruments of precision we have at our command, and to impress on you the necessity of you all supplying yourselves with an ophthalmometer and of using it intelligently.

The value of this instrument, in my mind, is dependent on two things: First, the seat of the trouble, and, second, the accuracy with which we determine its exact nature.

Let us consider, therefore, these points in the order in which I shall state them. What is astigmatism, where is it located, and what are the forces which tend to overcome it? Astigmatism means that the refraction of the eye is not the same in all its meridians. We recognize two kinds —regular and irregular. By regular astigmatism we mean that we have two meridians the foci of which are different, and that instead of having on the retina a focal point, we have a line. These two meridians are usually perpendicular to each other, and their foci are capable of being brought together either by forces situated in the eye itself, or by lenses placed in front of it.

Irregular astigmatism implies that instead of two meridians we may have any number, by which rays of light are so broken and twisted that it is impossible, by any known means, to bring them together, and is therefore capable of very little if any improvement. This condition is the result of disease and we can do very little for it. It can, however, as a rule, be easily detected, both with the ophthalmoscope and ophthalmometer, and need never be mistaken.

Regular astigmatism has to do with the refractive apparatus of the eye. Those of you who honored me with your presence when I read my paper on errors of refraction know how I would classify regular astigmatism. For the benefit of those who were not present, I will state my conclusions briefly as follows:

Hypermetropia and myopia are due to variation in the length of the optic axis and can not with justice be called errors of refraction. Astigmatism is conceded to be due to error in the refractive apparatus, meaning the cornea or lens, and is the only error of refraction that can be justly called by that name.[*] Astigmatism, therefore, being truly an error of refraction, must have its seat in the refractive body, and we are narrowed down, for obvious reasons, to the consideration of the crystalline lens and the cornea.

Astigmatism could not be due to the aqueous or vitreous humors for purely physical reasons. And I am convinced that primary astigmatism of the crystalline lens is equally impossible.

In a letter of mine published in a medical journal of a neighboring city, the editor accused me of making gross and glaring misstatements. I have forgotten the exact language, and without any very definite reasons, or at least if he had any he failed to state them, arbitrarily refused to discuss the question with me further. Whether he felt the weakness of his ground or considered me too small a game I am unable to say.[*] At any rate, I shall not follow in his footsteps, but will endeavor to prove to you why, in my opinion, primary astigmatism of the lens is impossible. In discussing this subject it will be necessary to consider the lens both in a state of rest and accommodation, and the forces which control it.

The crystalline lens is a biconvex body situated behind the iris, with the pupillary border of which it is in contact. In front of the lens beside the iris is the aqueous humor, which, being a fluid, exerts an equal pressure on all parts of it. Behind the lens is the vitreous humor, which, being semifluid or gelatinous in consistency, exerts also an equal pressure in all directions. The lens is suspended between these two media by the ciliary body through the intervention of the suspensory ligament, the zone of Zinn.

The structure of this zonular ligament is still a matter of doubt. It is described as composed of tough fibers which spring from the vitreous body, of which they are a part. They seem to start from the region of the ora serrata, passing forward to the most anterior part of the ciliary body, from which they are bent inward and pass to the anterior and posterior portions of the lens capsule. They are supposed by some authors to contain muscular fibers, and when divided the severed ends appear wavy, like elastic tissue.[†] Or, again, it is described as composed of an agglomeration of fibers having the nature of connective tissue.[‡]

It would seem, in studying the mechanism of accommodation, as if there must be some elasticity present to account for the changes that take place.

The ciliary muscle has its origin from the sclero-corneal juncture or in that region, and extends backward in a fan-shape. Its outline is pyramidal, having its apex backward,[#] or, as said by some, having its apex at its point of origin.[‖]

Having this structure, the action of accommodation is simple. The contraction of the ciliary muscle draws its point of attachment toward its origin. The origin being at the sclero-corneal juncture, and the attachment into the ciliary body and chorioid, some fibers, in fact, going back to the opic nerve entrance,[△] the whole interior of the eye is drawn forward. The chorioid and retina come forward, the ciliary processes are drawn together and thickened. The whole peripheral insertion of the zonular ligament is drawn toward the lens. In consequence of this, the tension exerted on the lens is relaxed, and it becomes more convex through its own elasticity. Relaxation of the ciliary muscle causes the reverse of this action. But while the action of the ciliary muscle in accommodation denotes force and exertion, relaxation is passive and denotes no power.

If the lens, through its own elasticity, can become more convex, simple muscular relaxation, which is purely a passive movement, could not of itself overcome it. If there is elasticity in the zonular ligament, then, as it springs back into place when released by the muscle, a struggle must take place between it and the lens for supremacy.

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[*] *Post-graduate*, June, 1892.

[*] *Medical News*, April 23, 1892.

[†] *Lectures on the Human Eye*, by Adolph Alt, M. D.

[‡] Landolt. *Refraction and Accommodation of the Eye*

[#] *Ibid.*

[‖] Noyes. *Diseases of the Eye.*

[△] *Ibid.*

But the ligament is re-enforced by another factor, which is the tension of the eye. Neither the ligament nor the tension is sufficient in itself to overcome the elasticity of the lens, but the combined action of the two accomplishes the purpose. Again, the amount of tension of the eye is not constant. Neither is the power of accommodation constant. And this, it seems to me, is not entirely due to the ciliary muscle. Anything which will increase or diminish the tension will materially affect the power of accommodation.

This is shown by the occurrence of presbyopia, where, besides the lens losing its elasticity through hardening of its structure, increase in intra-ocular tension generally occurs. I think it is an accepted fact that tension of the eye is increased with advancing age.

Again, a most striking example of the effect of tension of the eye on the power of accommodation is shown by the occurrence of glaucoma, one of the earliest symptoms of which is loss of accommodation and recession of the near point.

So if the tension of the eye exerts a power in overcoming accommodation, and if that tension is equally distributed over the anterior and posterior surfaces of the lens, we can easily see how impossible it is for that body to assume any irregularity in its outline while in a normal condition as regards consistency.

If the tension of the zonular ligament is relaxed in any one part, as it is possible might happen through irregular muscular action, we can see how lenticular astigmatism might occur.

But irregular muscular action does not take place except from some definite cause. If the refractive media are not the same in all meridians, then the effort of Nature to compensate might, and does, produce irregular muscular action. Irregularity can not exist in the aqueous or vitreous humors except as the result of disease. But it can, and does, exist in the cornea; and lenticular astigmatism when it exists other than as the result of cataract or disease of other kind, is invariably the effort of Nature to overcome corneal astigmatism, and is purely reflex and secondary. It always occurs when a person with corneal astigmatism has perfect vision.

How shall we then detect corneal astigmatism?

I have told you so often that you may have come to think it tiresome that the ophthalmoscope and retinoscopy will give you the gross facts. But very few oculists would be content to prescribe glasses on their findings alone. Atropine will give the facts fairly well, and, I think, in the majority of cases accurately. I say in the majority of cases, because there are times when atropine fails totally. And if you rely on it alone, some patients will go improperly fitted, as witness the case of Dr. T., one of our students.

The doctor complains of constant headache and is unable to work. He has been wearing —0·50 D. s., given him after a course of atropine. The ophthalmoscope shows him to be hypermetropic, but he absolutely refuses plus glasses. The ophthalmometer shows him to have 1 D. astigmatism with the rule axis 90°. He has worn the cylinder indicated now for nearly a month with perfect relief.

His case is not an exception by any means. I could show you a great many histories of like cases in my casebook.

Again, if you find the astigmatism under atropine, you can not always be certain about the axis. In a paper read before the American Medical Association last year, by Dr. G. M. Gould, of Philadelphia, the failure of atropine in some cases is expressly shown.* With the ophthalmometer, however, we can tell absolutely and certainly the presence or absence of astigmatism. The meridians of greatest and least refraction and their axes are pointed out to us as absolutely and certainly as anything ever can be.

Atropine is a most valuable agent in the treatment of certain diseased conditions of the eye, but for the determination of error of refraction it is not only uncertain and often misleading, but absolutely unnecessary.

Some individuals will always be found who, with perhaps admirable, but nevertheless unfortunate, pertinacity, will cling to a lost cause as long as life remains; but to you, if you desire to place yourselves on an equal footing with the ophthalmologists of to-day, my advice is, get an ophthalmometer and use it intelligently.

158 East Eighty-first Street.

AN ELECTRICAL NOVELTY.

NATURAL ELECTRICITY AND PHYSIOLOGY.

By GEORGE QUARRIE.

Let a man be placed on an electrically insulating glass stand in a dry atmosphere, and let him begin exercising with a pair of dumb-bells; let the soles of his feet be electrically connected with earth by a copper wire having fixed on it a galvanometer; it will be found that as he exercises, the galvanometer will be strongly deflected, showing that a current of electricity is passing from the man's feet soles to the earth. This has been practically demonstrated, and it so exactly coincides with my estimate of electricity, as it exists in and affects the animal system, that the following practical deductions can hardly fail to greatly impress, if not satisfy, even the most skeptical. As theory, however, is ever less satisfactory than practice, I appeal to the latter to establish the real value of what I am sanguine enough to consider a valuable discovery. My discovery is, that civilized man is seriously damaged in health by wearing on his feet a covering in the shape of prepared leather, which more or less insulates his body from the earth. It is for this reason, principally, that he is so notoriously inferior to savages, or to people living in a semi-barbarous state, or to the lower animals, in powers of recuperation under bodily injury, as well as in suffering from many diseases to which these others are total strangers.

Now, to an *electrical engineer* (to whom, unfortunately, *all* electrical questions are at present referred) the current, detected as passing between the man and the earth, is so mean a thing, dynamically, as to be entirely beneath his notice; and as to insulation, he immediately assures me that he can *force* through my shoe-soles enough current electricity to kill me on the spot! Granted. But I am not speaking of what may be *forced;* I am speaking of Nature's quiet regulation of electric potentials in the human body—natural or static electricity. It is not an inapt comparison to speak of these two electrical conditions as analogous to that of water, in the two states of steam and Nature's evaporation. These are both the vapor of water, but, dynamically considered, of what account is Nature's evaporation to the engineer? He touches his safety-valve and cries: "There's potential for you!" He can not measure, nor has he ever considered, any force whatever of so low potential as that of Nature's evaporation. Yet how stupendous are the results of this low form of force in its place—Nature! In the same light, although electrical engineers look with scorn upon the (to them) weak or undistinguishable currents that pass between the bodies of animals and the earth, yet that lower form of electrical potential, like the milder form of evaporation, is of vital importance in its own place—viz., animal life.

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* *Journal of the American Medical Association*, vol. xvii, No. 12.

Dr. Waller, of the London Hospital, after devoting four years of close observation to this question of electrical therapeutics, using the great facilities in his hands for the most careful experimental research, writes as follows:

> "One of the most fundamental and certain facts in physiology is, that the active state of a living tissue is marked by a fall of electrical level; in other words, an electrical depression is the best, most certain, and most delicate physical sign of physiological action."

By way of illustration, from matters of common knowledge, it is not difficult to find facts which are striking, if not convincing enough for any one. Take the rich, and the very poor or half barbarous, living families in the country, or country towns. Look at their children. The lady from the hall, visiting the mud hovels on her estate, is ever confessing that she almost dies of envy of poor Mrs. Buggins, to see the round, rosy cheeks, sturdy limbs, and bright, liquid eyes of her barefooted little brats, while sighingly contemplating her own pale, puny, and sickly darlings. "And yet," says the lady, "I feed them on as simple food as you do yours, Mrs. Buggins, and they continually play in the same open air as your little ones thrive in. What is it, or why is it there should be this difference?" Such has been the question of all time. The little, bare, red feet of the common child have always escaped notice as anything more than causing an appeal to the hearts of the rich, making them send the poor mother a supply of left-off shoes and stockings for her shoeless urchins; which, however, said urchins decline to wear; "they make their feet hot and tired, etc.," and off they go on their own leather again; and they continue to grow healthy and strong as young oxen, while on the same soil and in the same air their rich neighbors do the reverse. Negroes and coolie laborers, who never by any chance wear shoes, are remarkable for their freedom from diseases to which the civilized are subject. They have no toothache—their teeth indeed are proverbial for whiteness and health, without any toilet attention whatever. They are never bald, and their sight is remarkably clear and good, even in advanced age. The eyes of such people have that liquid clearness that one sees so seldom among ourselves; it is the characteristic eye of most wild animals.

To attribute this superiority to a different style of food, etc., is simply absurd, for individuals from among such people who have been employed in some capacity where they *have to wear shoes*—other conditions remaining the same as before—very soon show the usual symptoms denoting a departure from Nature's law—*i. e.*, they become bald, weak-eyed, and have decayed teeth, etc., such as they never before knew. In this I speak from personal observation during two years' life right among such people in the West Indies.

Again, in Scotland, in the grounds of large mansions, where immense lawns are kept closely mown by horse-power, I observed that the men never used the same horse two days in succession. The reason of this I found to be, that as the horses in this work are always shod with great leather or rubber overall shoes or slippers, to prevent their cutting or defacing the sward, they can not be so employed day after day without serious damage to their general condition, but especially *to their eyes.* A week or two's continuous work at this invariably injures horses' eyes, some becoming in that time totally blind. I pass over cases where continued damp or wet shoes and stockings have led, through colds and coughs, to phthisis, and where injury to the foot sole affects the jaws, wherein our teeth undoubtedly vegetate, like plants in the ground—thus indicating the possibility that dental caries proceeds from a continual interference with Nature's electrical provisions in our feet.

I ask any man, before he decides this question for himself, to consider for a moment the wonderful construction of his own feet soles. Why are they provided by the Creator with that marvelous cluster of cutaneous nerve endings which so distinguishes them from any other part of his body? Why have we here those myriads of little nerve feelers brought right out into the papillæ of the skin, so that if free to do so, they would have actual contact with the earth as we walk on it? Was that provision made in vain? We must acknowledge that, if so, it is certainly the *first* of Nature's provisions which can be called so. Now, the latest advances of science on every side concede the fact that the nervous system is, to all intents and purposes, the electrical system. I therefore contend that our feet soles were designed to act as an electrical highway between our bodies and mother earth, and that the maintaining that highway in a free and unimpeded state is a matter of vital importance, not only to man himself, but to all other animals on earth.

It is so easy to multiply proofs of the absolute truth and importance of these facts, by practically relieving, as I have so often done, sufferers from various forms of sore feet—these being undoubtedly the first outward signs of Nature's protest against our violation of her laws—that volumes might be filled with their narration. Instead thereof, let us endeavor to suggest a remedy. To this end I provide our ordinary shoes with an in-sole of good conducting material, with very fine wires invisibly fixed, so as to afford perfect electrical communication between this in-sole and the earth; so that a man in his ordinary footwear is caused, in an electrical sense, to literally walk barefooted on the ground, as he ought to do. The effect of this most simple attachment to shoes, as an immediate relief from cold feet in winter and from painful and swollen feet and ankles in summer, often amounts to almost a miracle. I have myself purposely worn rubber-soled shoes until my eyes became sore as if filled with sand, and the pain in my feet soles was unbearable. I have then had attached the metallic earth connection as described, and at once all was changed; the shoes immediately became easy, not hurting my feet at all, and in a short time my eyes were again perfectly well.

In conclusion, I would put the question to the profession and laymen alike—for any man of intelligence is capable of fairly judging such a matter for himself—Is not my simple and rational plan, viz., to give heed to and obey Nature's plain demands as to our feet soles, worth a fair trial?

Men of such universal and deserved fame on the subject of the nerves as Dr. Weir Mitchell, of Philadelphia, and Dr. Brown-Séquard, of Paris, have written as follows. The former says: "I have very little doubt that in some instances of local nervous disease the starting-point lies in the dermal nerve papillæ." Dr. Brown-Séquard says: "The same peripheric cause of irritation, acting on the same centripetal nerve, may produce the greatest variety of effects, including every functional nervous affection or disorder." For the benefit of any reader unfamiliar with medical technicalities, we may be allowed to offer a free translation of these opinions. Both these experienced physicians here say that any nerve irritation—*i. e.*, any artificial or unnatural interference with ordinary nervous action or circulation in the outer skin or surface of some part of our bodies—is quite capable of producing serious disorders in any other, either external or internal, part, be it near to or far distant from that outer portion so acted on. Wherefore, that interference already described, with the natural nerve circulation between our feet soles and the earth—those soles being the most highly organized nerve surface of any in our bodies—may (and I contend does) produce in one person blindness, in another deafness, in another baldness, or cancer, or consumption of the lungs, heart failure, decayed teeth, rheumatism, neuralgia, or, indeed, any other unnatural or diseased state, in any other part or parts of our whole system, the organ affected differing in different subjects, simply because some are weak in one place, some in another, the particular location being determined entirely by the idiosyncrasies of constitution, the disease taking hold in each subject at his weakest point.

From well-understood physiological causes, the eyes are, perhaps, in all cases the first organs plainly damaged by insulation of the feet; but though they are more directly, they are no more surely injured by it than other organs are in time.

As a ready test, and as a negative way of proving the benefit of earth connection, let any one interested try the following experiment: Paper is a good insulator. Take, say, three or four thicknesses of any common *dry* paper, say, newspaper, cut in-soles of it, and wear them daily in your shoes, taking care to renew them of fresh, dry paper daily. After four days, how does he feel? His feet soles are very painful, his eyes inflamed and sore, much as if dust had got under the lids, and altogether he is uncomfortable and feeling out of order. Now, this clearly shows that insulation is injurious, and this experiment is only assisting our shoes a little in that partial but destructive insulation which they inflict upon us every day we wear them. Though our teeth are more slowly affected, like other organs already alluded to, yet my experience goes directly to prove that electrical earth connection of the feet benefits the teeth as truly as it does the eyes. For in my own case, whereas formerly I was every now and again a great sufferer from toothache, since January, 1888, when I first adopted this plan, I have never had an ache or pain in my teeth, and they have neither required nor had any other treatment to account for this great change. I can say quite as much of my lungs. Formerly I was hardly ever clear a month at a stretch of a most annoying cough and wheezing, just as if I had been well started with asthma. Since the date named I have been entirely free from coughs or wheezing, and, indeed, from any bodily ailment.

While so much remains of uncertainty as to cause and effect in the nervous system, with an ever-increasing spread of nerve troubles among mankind, and while all will subscribe to the aphorism that "prevention is better than cure," it is hardly too much to hope that anything novel on the latter lines, which may fairly claim an appeal to reason or common sense, should be welcomed and receive the fairest trial. That trial—a practical test of the benefit to the human system of electrical earth connection—is all that is necessary or desired.

275 West Twenty-second Street.

Bacteriology of Endometritis.—"In order to investigate the bacteriology of endometritis," says the *Lancet*, "Dr. Brandt, of St. Petersburg, recently examined twenty-five cases, including hæmorrhagic, catarrhal, gonorrhœal, and septic forms. After carefully cleansing the external genitals, the vagina, and the cervical canal with a solution of corrosive sublimate of the strength of 1 in 1,000, with alcohol and with ether, preliminary bacteriological observations on scrapings from the cervical canal invariably giving negative results, the internal surface of the uterus was scraped with a curette, and dry preparations as well as cultures in agar and gelatin were made. The plate method was likewise employed, as were inoculations in animals. The portions of mucous membrane brought away were also carefully examined with the microscope. In almost all cases microbes were found, both pathogenic and non-pathogenic—the former, however, preponderating. Of these both cluster and chain cocci were met with; among the non-pathogenic bacteria there were occasionally bacilli, but most commonly cocci. It was remarked that cases where pyogenic microbes were found were not clinically distinguishable from others where none could be detected; these pyogenic microbes, however, when injected into animals invariably produced both local and general symptoms, such as abscesses and a rise of temperature. Sometimes, but by no means always, microbes were seen in the substance of the mucous membrane."

Ollier on the Regeneration of Bone.—Dr. B. Merrill Ricketts, of Cincinnati, informs us that he is engaged in making a translation of a work by M. Ollier, of Lyons, entitled *The Experimental and Clinical Study of the Regeneration of Bone and of the Artificial Growth of Bony Tissue*, and hopes to have it published within a year.

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THE SURGICAL IMPORTANCE OF MICROBES OF THE SKIN.

It has been the experience of all surgeons that, notwithstanding great care exercised in the disinfection of the operator's hands, his instruments, and his dressings, as well as a thorough disinfection of the field of operation and its environment by antiseptic cloths, the first change of dressing often reveals a slight degree of suppuration along the line of suture. The operator, with a just faith in his precautionary measures, has attributed the infection to necrobiosis; or to floating matter in the air that, falling on the wound, was not removed by the generous irrigation he employed; or to the presence of micro-organisms in the system.

While the latter may be the case, recent research has shown that a cutaneous nidus for germs exists that is much more accessible to the surgeon than many have supposed. Mr. C. B. Lockwood, who published a preliminary report upon aseptic and septic wounds in the *British Medical Journal* for October 25, 1890, has recently published in the same journal an account of his further experiments. His paper includes a report of several cases of aseptic wounds in which the granulations and scars were scraped when the wounds were dressed, and gelatin tubes inoculated from the scrapings; but the gelatin remained sterile. Septic wounds are divided into two classes: One in which the depths of the wound are infected before repair has begun, and another class in which the superficies of the wound becomes infected after repair has begun. In such wounds inoculation of gelatin culture tubes with scrapings from the granulations affords a plenteous growth of micro-organisms.

His examinations agree with those of Bloch and others, that in wounds treated with antiseptics cocci are usually found, bacilli rarely. But in ordinary skin he has found various kinds of cocci, streptococci, and bacilli, while, after a thorough disinfection of an area of skin in which there were sebaceous or sudoriparous glands, expression of the gland contents showed that they contained several varieties of micro-organisms.

When he had demonstrated the possible source of wound contamination in the skin itself, the question to be determined was that of how it could be prevented. Iodoform rubbed into the skin inhibited the growth of the micro-organisms, but the same results were obtained with boric acid and with quinine on gelatin plate cultures as were obtained with the iodoform. Salicylic acid killed cutaneous micro-organisms in ten minutes on gelatin plates, but the author thought it too strong to apply pure to the skin. Experiments will be made with other substances in the hope of obtaining some drug that will inhibit the development of the micro-organisms and not injure the skin.

Besides Halsted, Bloch, and Cheyne, few surgeons have dealt with this question experimentally, and in most text-books of surgery the subject is barely mentioned. Several dermatologists have written upon micro-organisms of the skin; and their monographs, in addition to the well-known bacteriological works, afford a literature that will have to be consulted by the next surgical author who desires his text-book to be abreast of the times.

THE BACILLUS OF MEASLES.

Germs have been found by various investigators in the blood and secretions of patients suffering from measles. None, however, have been certainly proved to be active agents in the production of the disease. Very recent investigations are those of Canon and Pielicke, of Berlin, and they are reported in the *Berliner klinische Wochenschrift* for April 18th. There seems good ground for the belief that the germ they have discovered is the active cause of the disease. It is a bacillus varying considerably in length and appearance under different circumstances. It was found in the blood of fourteen patients sick with measles. A similar germ was also found in the sputa and the nasal secretions. It was present during the whole course of the disease, and occasionally for two or three days after active symptoms had disappeared. It was most abundant at the time of defervescence. In seven cases in which active symptoms had disappeared, but in which the rash had not wholly faded, the bacillus could not be discovered. This bacillus is undoubtedly different from any germ yet described in connection with measles. It is to be hoped that the belief of the discoverers will soon be confirmed by the investigations of others.

MINOR PARAGRAPHS.

A BACTERIOLOGICAL ANALYSIS OF BANK-NOTES.

In a city in which the mortuary statistics show a large proportion of infectious diseases, every factor that enters into the dissemination of these diseases is of interest. So Dr. E. Acosta and Dr. F. Grande Rossi have reported in the June number of the *Crónica médico-quirúrgica de la Habana* the results of their bacteriological analysis of the bank-notes of the Spainsh bank of Havana, in general circulation. It was found that circulation increased the weight of bank-notes, in consequence of their acquiring foreign matter. The author's bacteriological examinations showed in the notes in use for some time a considerable number of microbes, and in two notes they calculated there were 19,147 microbes. In the notes that were analyzed there existed a septic micro-organism that rapidly killed animals inoculated with it. Besides this, eight pathogenic species were encountered, including those of diphtheria, tuberculosis, etc. The authors therefore concluded that bank-notes were a potent means of transmitting disease, and that their use by children was especially dangerous, because the Havanese children have the habit of carrying the notes in the mouth, and may thus swallow the germs of some mortal disease. We have been told that in olden times, during the prevalence of epidemic disease, creditors and venders refused to receive money in their hands, all coin being dropped by the debtor or purchaser into a bucket of water. But they merely surmised that the "mechanism of exchange" might become the medium for infection. Now that the possibility has been demonstrated, and as the inconveniences of specie payment have made paper money a general favorite, banks should either turn into the Treasury all soiled currency or be provided with steam-pressure disinfecting chambers into which such money could be placed. Risks would thus be minimized and the bacteriophobist would have one cause the fewer for alarm.

THE TREATMENT OF PATIENTS AFFECTED WITH SCREW-WORM.

Dr. M. A. Goldstein, of Missouri, writes in *Insect Life* that he has had considerable correspondence with colleagues resident in Texas and Louisiana about the best treatment of persons troubled with the Texas screw-worm, or *Compsomyia* (*Lucilia*) *macellaria*. Quite a large list of drugs has been made out for this purpose, including ether, chloroform, carbolic acid, corrosive sublimate, and oil of turpentine. He has tried all these substances and regards them as both too harsh and not sufficiently prompt to be recommended for use on the sensitive parts, such as the nose and pharynx, that are frequently infested by the pseudo-parasite. He has made some experiments with pure carbolic acid, for example, and found that the maggot was not dead after an immersion of four minutes; in strong oil of turpentine the animal was alive after fifteen minutes. Chloroform, however, destroyed it in half a minute. In the diluted form, these agents accomplish but little. Dr. Goldstein has had no good results with any of these drugs, and surgical means have had to be brought into play before the worms were satisfactorily treated.

A FRANK CONSULTANT.

Sir William Gull may be taken as a type of the candid consulting physician. His remarks to his professional brother, who had called him in, were sometimes almost as unreserved as if he were thinking aloud. In a recent memorial notice of Dr. Gull, in *Guy's Hospital Reports*, we find mention of the following instances bearing on this subject: He once met a physician in a case of rheumatism in which Dr. Gull recognized a pericardial friction sound. Nothing was said to the family about this newly discovered element in the case; the general treatment was approved and the two medical men left together. The physician in charge expressed his thanks to the other that he had not disclosed the "dreadful oversight," and added: "I can not think how I can possibly have failed to detect the pericarditis." "Never mind," said Gull, "it is just as well, for, if you had detected it, perhaps you might have treated it." To a family practitioner who had much to say about his patient's constitution and peculiarities Gull would say: "How can you understand anything about this man's 'constitution,' when you have never made an examination of his urine?"

THE CHARLOTTE MEDICAL JOURNAL.

We have received the first number of this new monthly journal, dated July, 1892. It is edited and published by Dr. E. C. Register and Dr. J. C. Montgomery, of Charlotte, N. C. It consists of fifty-two pages of reading matter of very creditable quality.

HELIOCHROMY.

The new process of color photography which bears the name of Ives, of Philadelphia, is referred to in the *Microscope* as having achieved results somewhat superior to those yet seen from the studios of Vienna and Munich. His method is that of composite heliochromy, suggested over twenty-five years ago by Mr. Henry Collin, Queen Victoria's teacher of painting, and worked upon subsequently by many ingenious men in many lands. Mr. Ives has invented some special optical devices that appear to advance this branch of photography to a point in the reproducing of natural colors that promises great results.

ITEMS, ETC.

The Connecticut Medical Society.—The following banquet ode was read at the centennial anniversary of the society on May 26th:

Of science born, each radiant art
  She thrones within her starry fane,
Save one she shrines upon her heart—
  The one who bans and conquers pain.

O godlike child, thy ministers
  Now here, or far, forgot, unnamed,
Are rainbowed through the mist of years,
  And in a circling century framed!

Behold! the Charter-Commonwealth
  Uplifts that disc in learning's hall,
And proudly decks her knights of health
  While joining in their festival.

For well she knows within her bound
  Is not a pathway, lane, or street,
But hears their helpful message sound
  And thrills with thanks their toiling feet.

Outshines the joy for us, the few!
  Though subtle sadness tinge the rays
With thought of legions lost to view
  In faltering memory's thickening haze.

With grateful hearts through tender eyes
  Salute we now their vast repose,
Till phantoms from the banquet rise
  As verdure on their graves upgrows—

Till flattering fancy raptly hears
  A voice reverberating thence,
Commingling with the mirth and cheers
  Of comrades in the centuries hence.

"O brothers, in our cosmic light"—
  The striving ear interprets thus—
"The waves of joy that surge to-night
  Exhale in happy dreams for us!

"Let wit and humor soul invest
  Till reason lapse into the feast
Where Pallas hoots her owl with jest,
  And Bacchus masquerades as priest."

The banquet wanes; already fame,
  With lifting wing and eager eye,
Awaits this hour of joy to name
  Unto the new-born century.

O comrades, nerved afresh, resume
  Our task on science's battle-plain,
Till, far in time, her banners loom
  Triumphant o'er the realm of pain.

The International Dermatological Congress in Vienna.—The second meeting of the International Dermatological Congress will be held in Vienna from the 5th to the 10th of September. Many of the most distinguished representatives of dermatology and syphilography from all countries have promised to present papers, and the indications are that the meeting will be a great success from a scientific standpoint. The committee on organization, through the president, Professor Kaposi, has extended a cordial invitation to the members of the American Dermatological Association and of the New York Dermatological Society and others interested in dermatology in this country to be present. The membership fee, five dollars, should be sent, with titles of papers intended for presentation, to the secretary for North America, Dr. Prince A. Morrow, No. 66 West Fortieth Street, New York, or to the secretary general of the congress, Dr. Gustav Riehl, Wien, 1/20, Bellaria Strasse, 12.

The Mississippi Valley Medical Association will hold its eighteenth annual meeting in Cincinnati, on Wednesday, Thursday, and Friday, October 12th, 13th, and 14th, under the presidency of Dr. Charles A. L. Reed, of Cincinnati. An address in surgery will be delivered by Dr. Hunter McGuire, of Richmond. An address in medicine will be made by Dr. Hobart Amory Hare, of Philadelphia. The officers of the Pan-American Medical Congress will hold a conference at the same time and place.

Stolen Articles.—Dr. M. A. Veeder, of Lyons, N. Y., informs us that the following-named articles have been stolen from him: A binocular R. & J. Beck microscope, a Smith premier typewriter, No. 2,277, and a case containing part of a set of draughting instruments made by Keuffel & Esser, of New York. Dr. Veeder remarks that such articles are likely to come to the notice of physicians, and says he would be glad to hear about them.

The Cartwright Prize.—We would call our readers' attention to the announcement in our advertising pages concerning this prize for 1893.

Changes of Address.—Dr. Edward J. Bermingham, to No. 7 West Forty-fifth Street; Dr. Andrew F. Currier, to No. 85 Madison Avenue; Dr. F. H. Koyle, to Sharon, Mass.; Dr. Pedro J. Salicrup, to No. 129 East Seventeenth Street; Dr. John A. Wyeth, to No. 27 East Thirty-eighth Street.

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from June 26 to July 2, 1892:*

Harris, Henry S. T., Captain and Assistant Surgeon. The leave of absence granted is further extended one month.

Corbusier, William H., Captain and Assistant Surgeon, will proceed at the proper time to Island Lake, Michigan, and visit the camp of the Michigan State troops during the period of their encampment at that place, commencing August 18, 1892.

Stephenson, William, Captain and Assistant Surgeon, will visit the camp of the Illinois National Guard at Springfield, Ill., during the period of its encampment, commencing July 9, and ending August 21, 1892.

Owen, William O., Jr., Captain and Assistant Surgeon, is granted leave of absence for one month, with permission to apply for an extension of one month.

Meriwether, Frank T., First Lieutenant and Assistant Surgeon, now on duty at Fort Adams, Rhode Island, will report in person to the commanding officer, Madison Barracks, New York, for temporary duty at that post during the absence of Henry S. Turrill, Captain and Assistant Surgeon.

Mason, Charles F., First Lieutenant and Assistant Surgeon, on being relieved by Captain Raymond, will report in person to the commanding officer, Fort Snelling, Minnesota, for duty at that post.

Everts, Edward, Captain and Assistant Surgeon, is relieved from duty at David's Island, New York, and will report in person to the commanding officer, Fort Robinson, Nebraska, for duty at that post, relieving Henry I. Raymond, Captain and Assistant Surgeon. Captain Raymond, on being relieved by Captain Everts, will report in person to the commanding officer, Fort Washakie, Wyoming, for duty at that post, relieving Charles F. Mason, First Lieutenant and Assistant Surgeon.

McCulloch, Champe C., Jr., First Lieutenant and Assistant Surgeon, now on duty at Fort Sam Houston, Texas, will, by direction of the Secretary of War, report in person to the commanding officer, Fort Hancock, Texas, on July 1, 1892, for temporary duty at that post.

Society Meetings for the Coming Week:

Tuesday, *July 12th:* Medical Societies of the Counties of Chautauqua (annual), Clinton (semi-annual—Plattsburgh), Greene (quarterly), Jefferson (semi-annual—Watertown), Madison (annual), Oneida (annual—Utica), Ontario (annual—Canandaigua), Schuyler (semi-annual), Tioga (semi-annual—Owego), and Wayne (annual), N. Y.; Norfolk, Mass., District Medical Society (Hyde Park).

Wednesday, *July 13th:* Medical Society of the County of Seneca (annual), N. Y.; Tri-States Medical Association (Port Jervis, N. Y.); Franklin, Mass. (quarterly—Greenfield), Hampshire, Mass. (quarterly—Northampton), and Worcester, Mass. (Worcester), District Medical Societies.

Thursday, *July 14th:* Medical Society of the County of Fulton (semi-annual), N. Y.

Letters to the Editor.

THE BOARD OF HEALTH OF THE CITY OF NEW YORK.

New York, *June 28, 1892.*

To the Editor of the New York Medical Journal:

Sir: Some two months ago you referred to a certain resignation and a change in the *personnel* of the city board of health, and expressed the hope that the newspapers were in error in attributing these changes to political motives. Since that time two of the ablest and best-known consultants—a well-known surgeon and a prominent pathologist—in the city have severed their honorary connection as advisory and consulting officers of the board and of certain of the city institutions, because the board had "fallen into the hands of Tammany Hall," and was "a refuge for place-hunters." Their action and statement were based upon the changes you referred to, and, as the matter rested upon a question of veracity between the president of the board of health and the dismissed official, the gentlemen who have resigned have evidently believed that the latter has satisfactory evidence to sustain his statement that his removal was for political reasons.

I can not say that, in the light afforded by an essay to which I shall later refer, I am at all surprised at the action of the president of the board. He is a practical politician, and, as such, was appointed to his office. The laws of the city or State do not require any special acquaintance with sanitary science as an essential for holding the office. The fact that there are no laws making such a requirement may be taken as fair evidence that the community does not consider sanitary training a *sine qua non* for holding the office.

Is it not possible for men to live in advance of their fellow-citizens? With such *doctrinaires* the president of the board of health can not trouble himself. For his guidance in appointments, he has laid down for him the dictum of that distinguished statesman, the Hon. Richard Croker, who, in his brief but comprehensive essay on Tammany Hall and the Democracy, in the April number of the *North American Review*, says: "No political party can with reason expect to obtain power, or to maintain itself in power, unless it be efficiently organized. . . . Tammany *does* stand by its friends. We are willing to admit that the logical result of this principle of action would be that all the employees of the city government, from the Mayor to the porter who makes the fire in his office, should be members of the Tammany organization." Nothing plainer or more simple. Join Tammany, and hold your place! It is not often that I enter into medical politics; and I do not propose to defend the Tammany organization, for its renowned advocate has said that he would no more do this than "to defend sunrise as an exhibition of celestial mechanics, nor a democratic form of government as an illustration of human liberty at its best." But it is well to "take stock" in a mental as well as a business sense, and the profession should know the ground upon which it stands.

It has been an open secret for years that appointments as surgeons to the police force (notwithstanding the examination), to the various medical positions in the board of health, and to the non-remunerative positions as members of the visiting staff of the various municipal hospitals, were matters of political influence. If physicians are dissatisfied with this arrangement, though their long tolerance thereof would imply complaisance or at the most indifference, there are medical organizations in the city which can voice the sentiment of the profession.

Regarding the means of protest adopted by the gentlemen to whom I have referred, I surmise that the board of health, like Hippocleides, "cares not." Of course, it may render it difficult to obtain gentlemen of equal standing to accept the positions, because such acceptance would imply, under the circumstances, a certain lack of moral fiber that men occupying such positions are not likely to have. But the board will be more practical, I assume, than to worry over such theoretical considerations, and will easily find some next-best men to fill the vacancies thus created. I shall be pleased to hear the new appointments announced which will either "point a moral, or adorn a tale."

Ignotus.

NOTES ON TABLE WATERS.

Lowville, N. Y., *May 20, 1892.*

To the Editor of the New York Medical Journal:

Sir: Interested as I am in table waters, and as I think all physicians should be, I have been for some time studying the physiological effects and therapeutic efficacy of the more prominent mineral waters which are drank in such enormous quantity and used so freely throughout this country.

For the purpose of ascertaining the relative merits of our domestic waters as compared with those imported, I took Apollinaris as the leading representative of foreign waters, and the one most extensively used in this country, and proposed to subject it to a series of tests and comparisons with the Salutaris, as occupying a relatively similar place among the natural mineral waters of this country, and while these examinations were going on I unexpectedly stumbled upon The Report on Apollinaris, made by F. A. Starring and George C. Tichenor, special agents of the U. S. Government in 1879 and 1881, under the direction of the Treasury Department, to determine whether the Apollinaris is a natural or artificial mineral water relative to the imposition of certain import duties.

In this report I was not a little surprised to read, on page 7, the following statement by F. A. Starring: "It was frankly admitted to me that it had formerly been the custom to add to the water in the tanks a very minute quantity of common salt, carefully weighed and measured, in the proportion of ten parts of salt to ten thousand parts of water." Again, on page 26 of the report, Mr. George C. Tichenor says: "I found two pipes leading from the spring; the one was found to be connected with a reserve pump provided against accident, the other I traced to where the water was flowing from it into a basin or font, from which it is conducted into the tanks or reservoirs, where it is stored prior to being reunited with the carbonic acid and bottled. Above this basin or font I found an earthenware vessel containing liquid chloride of sodium (salt in solution), which was dripping slowly through a small faucet into the water in the font, where it commingled at once, on account of the agitation produced by the inflowing water. I was informed by the manager of the spring that the solution was so prepared and the faucet so adjusted, with reference to the pipe's capacity and outflow, as to impart exactly one part of actual chloride of sodium to one thousand parts of water." Again, on page 31 of the report, Mr. Tichenor says: "As hereinbefore shown, the Apollinaris Company adds to the water after it comes from the spring a quantity as stated, one part to one thousand parts of chloride of sodium, or common salt." And for this addition offers the following explanation a little below, on the same page: "The proprietor insists that it is done as a precautionary measure—viz., to guard against the possibility of the water's deterioration or decomposition." And, again, on the same page: "They"—the proprietors of Apollinaris—"scouted the suggestion that this introduction of salt was done for the purpose of covering or destroying any disagreeable taste in the water, for it has none naturally; or to increase its pungency, for it makes no difference in its taste; nor was it done, as it has been alleged, to imitate Selters water." The report then goes on to justify this procedure by stating, apologetically: "While this addition of salt does unquestionably change the water in some degree from the condition in which it exists in the spring, and therefore amounts to an increase of its natural ingredients, the practice appears to be sanctioned by usage, having, as I have been informed, been pursued in some form or other at many other mineral springs for many years, and before the Apollinaris was discovered." Furthermore, on page 32, this report says: "If it be wrong in principle to add the salt, it makes no difference whether the quantity added be one part or twenty parts."

The discovery that common salt is added to the Apollinaris water before it is bottled was altogether unexpected by me, because I had previously entertained the notion that it was wholly and entirely a natural mineral water, and that it was bottled and came to us precisely as taken from the spring, without any alteration or manipulation whatever. The admission that a quantity of salt is introduced was a disappointment, and, after reading this report, my estimation of Apollinaris having consequently undergone great change, in my subsequent comparisons I was forced to proceed mentally as dealing with a water which had the disadvantage of having been compounded in the process of bottling by artificial means. Furthermore, as a result of the discovery made in this report, I turned with greater curiosity and increased interest to the closer investigation of the Salutaris water, in order to determine to my own satisfaction whether a water so prominent as this water is known to be was not also receiving in a similar way some degree of artificial additions of salt or other ingredient to constitute its excellence of property.

In order, therefore, to observe better the method pursued in putting up the Salutaris, I visited the spring where the water is bottled, where the proprietors promptly afforded me every opportunity and facility for the closest investigation. I examined the Salutaris water as it flowed from the spring, the capacity of which is estimated at ten million bottles annually, and observed that it was conducted through a pipe leading from its natural source directly into the apparatus employed in bottling, corking, etc. Furthermore, I observed that the natural carbonic-acid gas inherent in the Salutaris water was, to a considerable degree, disengaged and diffused by being exposed to the atmosphere as the water came from the spring, and that a small proportion of gas was restored to the water during the process of bottling. The closest examination, however, failed to reveal any manipulation or addition of any salt or any artificial supplement or procedure whatever. With no effort at concealment, the entire process of taking the Salutaris water from the spring, and bottling, corking, wiring, packing, and shipping it, is open to the inspection of every visitor to this spring, and demonstrates the superiority of the claim that the Salutaris is, in fact, a natural mineral water.

In every test to which I subjected the Salutaris water I found it to be absolutely free from organic matter—the first requisite in a table water. My examination also demonstrated that Salutaris is superior in brilliancy and sparkle, and that when exposed to the air it does not become opalescent or lose its crystal clearness. By repeated testing, I observed that Salutaris is alkaline in reaction, and, by such means as I had at hand, the presence of salts of sodium, lime, magnesium, in addition to the chloride of sodium, was demonstrated, thus sustaining the published analysis of the Salutaris water. In taste I found this water possessed of a peculiar and pleasantly refreshing flavor wholly unlike that of any other table water known to me. Its remarkable piquancy and freshness of flavor was the same from bottles which it was said were filled six years before, as when taken directly from the spring. This quality, together with its absolute purity, renders it a very desirable water in the sick-room to allay the thirst accompanying febrile diseases, a great desideratum to the physician who considers the comfort of his patient as well as the danger of taking germ-laden waters into the debilitated body. I learned by observation, also, that the Salutaris water was a most excellent corrector of many disorders of the stomach, relieving and preventing acidity and fermentation, and promoting the assimilation of food; that it possessed a mild diuretic effect upon embarrassed kidneys, gently increasing the flow of urine, while restraining the loss of albumin in Bright's disease; in relieving calculous obstructions and in preventing "gravel" or "brick-dust" sediment in the urine. For such reasons the Salutaris water may be regarded by physicians as a desirable adjunct to their materia medica and of great usefulness in the treatment of diseased conditions. In malarious districts also, where the ordinary drinking water is bad, the Salutaris water should be highly prized by those in health as a preventive, owing to its immunity from all infectious germs as well as for its refreshing properties.

My conclusion, therefore, is wholly in favor of the superior excellence of Salutaris as a table water, not alone for its purity, its sparkle, its flavor and admirable natural mineral constituents, but also because, in addition to all these excellent qualities, it is *a native mineral water*, delivered to the consumer just as it comes from the cool depths of the spring, without any manipulation or elimination of salts or other ingredients whatever, and may be safely regarded uniform in all its desirable qualities after undergoing transportation and storage for an indefinite period. J. D. Kelly, A. M., M. D.

ASPARAGUS.

Springfield, Ohio, *June 7, 1892.*

To the Editor of the New York Medical Journal:

Sir: The editorial entitled The Pharmacology of Asparagus, which appeared in the last issue of the *Journal*, being in such a direct line with some experiments I have just brought to an end, I beg to submit the results for consideration. The incentive of my investigation was based upon the following circumstance: A gentleman presented himself before the medical examiner of a certain life insurance company for examination. When it came to the examination of the urine, it was found to respond to Fehling's test for sugar by causing a precipitate of the suboxide of copper (Cu_2O). This fact was communicated to the gentleman, in whom it occasioned considerable mental uneasiness. Going immediately to his family physician, he stated his case, and was, by order of his physician, referred to me. When in my presence, the gentleman voided about 250 c. c. of urine of a light straw-color, specific gravity 1·030, almost odorless, and of acid reaction. Upon applying successively Trommer's, Fehling's, and Böttger's tests, the urine responded to them all, thus indicating the presence of sugar; but upon fermenting a sample not a trace of sugar was revealed. To harmonize these results, it became necessary to ascertain what was causing this unusual reaction. The only solution of the difficulty appeared to be in the fact that the gentleman had, on the day previous, eaten heartily of asparagus. To confirm this, on the day following I tested my own urine by the above-mentioned tests (including fermentation), and no sugar was detected. I then ate a quantity of asparagus and tested my urine afterward every half-hour. In about an hour and a half the urine possessed the peculiar odor so well known, and responded to all the tests mentioned save fermentation. Twenty-four hours later a trace yet remained, but in forty-eight hours even that disappeared. I have repeated this experiment in eight cases with the same results. The light of these experiments leads me to this conclusion: That the ingestion of asparagus does *not* cause saccharinity of the urine, but something is formed and excreted which causes a response to the reagents used by physicians for detecting sugar; but by fermentation all doubt can be set aside. Justin D. Lisle, M. D.

MEDICINE IN INDIA.

Bombay, *May 26, 1892.*

To the Editor of the New York Medical Journal:

Sir: Medical science as practiced in Europe and America is somewhat arriving at perfection with the exception of remedial measures. In India, too, where ancient medical literature is well studied and considered as by a scholar, anybody will be surprised to see its resemblance to the latest and best-matured views.

In India remedial measures are far simpler than and much in advance of those of Europe and America. If ancient Sanscrit and Arabic literature had been translated, it would have helped much in the advancement of the science; not only that, but it would have perhaps revolutionized it by securing remedies for some intractable and incurable cases.

It has been conclusively proved, from the hot contest that was carried on in the vernacular papers between Western and Eastern scholars, that the remedial and diagnostic mode of the ancients in some diseases is far superior to the Western one. Had it not been for India, the European and American materia medica would have been defective. If the Western and the Eastern scholars in India had worked in union for the common cause, the gap would have been filled up long ago.

England has not done so much as it could have done in improving the Indian materia medica. The Pharmacopœia of India was published under the immediate authority of the Secretary of State for India, but, strange to say, it does not contain the names of even one Vaidya or Hakim in the list! Some of the eminent Vaidya and Hakims were then living, and, if they had been appointed on the committee, they would have proved as useful—nay, even more. As a native of India can not become an expert in English literature, so an Englishman can not be the same with respect to the vernacular literature. Some exceptions could be found, but they can not be laid down as general propositions. When the Germans, the French, and the Americans are leaving no stone unturned to find out the therapeutic effects of Indian drugs, England is lying idle! Excepting marriage and a few other bad customs, Hindoo habits are based upon hygienic measures.

I have penned these few lines with a view to draw the attention of the British and foreign medical profession to their shortcomings and to awaken the Indian government to the sense of their responsibility. If this is published, I shall be encouraged to carry on future correspondence, and for it I shall feel highly obliged. Gopinath Crushnajee.

DEATH FROM CHLOROFORM.

West Superior, Wis., *June 5, 1892.*

To the Editor of the New York Medical Journal:

Sir: In reading the interesting report of A Death from Chloroform, by Dr. J. C. Reeve, in your last issue, it occurred to me that it was just possible that death in this case might have been caused by morphine.

I have used chloroform as an anæsthetic almost exclusively for a number of years, with satisfaction and safety, and I am loath to have it blamed where there exists a doubt in its favor.

My own impression is that a hypodermic injection of a quarter of a grain of morphine is an unsafe dose to give just before the administration of an anæsthetic, or, in fact, at any other time, to a patient with whom you are unacquainted; it is, no doubt, made safer by combining it with atropine.

The stimulant effect of a moderate dose of morphine, in its earlier stages, is well known, and its antagonism to the depressing influence of chloroform is valuable, but, if you depress the heart and circulation, and paralyze the respiratory center by too large a dose, it is hardly fair, I think, that chloroform should bear the whole blame for the unfortunate result.

The report in this case states that the "patient stopped breathing several times and revived again, and did that several times until all was over," and Dr. Shepherd says "the pulse was forty-eight and weak."

This peculiar state of the respiration, together with the slow pulse, is particularly suggestive of opium.

It is very desirable and important that in a case of this nature, where death is alleged to be caused by an anæsthetic, there should be a thorough examination made, and all the circumstances—even the most minute—connected with the case be carefully investigated.

This course was evidently not adopted on this occasion, and the verdict that the "deceased came to his death by nervous shock" is vague and unsatisfactory. John Reeve, M. D.

Book Notices.

Surgical Diseases of the Ovaries and Falloppian Tubes, including Tubal Pregnancy. By J. Bland Sutton, F. R. C. S., Assistant Surgeon to the Middlesex Hospital, etc. With One Hundred and Nineteen Engravings and Five Colored Plates. Philadelphia: Lea Brothers & Co. Pp. xvi–500.

This book, although of very moderate size and dealing with a comprehensive subject, is one of the most valuable of recent contributions to the literature of that subject, especially from the physiological and pathological points of view. It consists almost entirely of the author's own observations and his deductions from them, and one of its chief merits is its freedom from the speculation that is conspicuous in almost all gynæcological books.

We have not space for an extended criticism, but will remark upon some of the more salient points in the work. In the first place, the author gives a very graphic account of the fundamental, or "primary," characteristics of the sexes and their superficial, or "secondary," characteristics. But he is somewhat too arbitrary, we think, in stating that, so far as the human family is concerned, the latter are exclusively in the possession of the male, for greater muscular development and greater physical strength are not more positive characteristics than the lesser muscular development and inferior physical strength of the female. Moreover, he says that the pubic hair in men passes upward to the umbilicus, whereas in women it is restricted to the pubes. This gives the idea that in men the hair extends upward in the full breadth that it occupies in the pubic region, which is not generally the case.

Mr. Sutton is not convinced of the truth of the doctrine put forward by Pouchet and John Williams that the uterine mucous membrane is exfoliated at the menstrual periods. His opinion is that when that change has been observed post mortem it has been due to processes that have taken place after death, and he has supplemented such observations by investigations of the uterine and tubal mucous membrane of Macaque monkeys, which, together with baboons, are, so far as his observations have extended, the only mammals, except women, that menstruate. His observations in this line of inquiry are very interesting and we shall cite them somewhat at length.

In Macaques, he says, menstruation is accompanied by certain unmistakable objective phenomena besides the escape of blood from the genital canal, all the naked or pale parts of the body, such as the face, the neck, and the ischial regions, assuming a vivid pink color, in some cases bright red. The amount of the bloody discharge from the uterus is very slight and it soon ceases, but the accompanying coloration of the parts lasts from three to seven days. In warm weather the labia are much swollen during menstruation. Baboons present similar objective signs, but in an exaggerated degree. After these signs of menstruation had been witnessed in many Macaques and baboons, and it had been ascertained beyond a doubt that there was an actual flow of blood at those periods, some of the animals were killed at the beginning of menstruation, some when it was at its height, and others when it was declining. Generally the uterus was removed at the instant that death occurred and placed in a preservative fluid. In none of the beautiful and trustworthy specimens that the author was thus enabled to obtain could he find any trace of destructive changes either in the uterus or in the oviducts—not even shedding of the epithelium. His observations have thrown no light whatever on the source or cause of the hæmorrhage.

After some further interesting observations on menstruation in monkeys, baboons, and women, he offers the following conclusions: "1. Macaque monkeys and baboons suffer a periodical loss of blood from the uterus. 2. It is unaccompanied by any destructive change of epithelium, either in the uterus or in the Falloppian tubes. 3. It appears to recur once in six months in the summer; it is, however, difficult to decide the exact length of the menstrual rhythm. 4. In the human female the mucous membrane of the Falloppian tube undergoes no structural change during menstruation. 5. In the human uterus the destructive change is limited to shedding of the epithelium, and it is doubtful if this occurs normally." (Elsewhere, however, he says that the actual source of the blood is the mucous membrane of the uterine cavity.)

The book deals with almost every known morbid condition of the ovaries and oviducts, and various conditions are treated of that have not hitherto been generally recognized. About a third of the volume is devoted to the subject of tubal gestation. Salpingitis, hydrosalpinx, and pyosalpinx are accorded considerable space. The author is of the opinion that there is no positive evidence to show that collections of fluid in the Falloppian tube are discharged spontaneously through its uterine ostium, also that in cases of pyosalpinx conservative treatment is useless—in both of which statements we feel constrained to disagree with him.

The author's style of writing is exceedingly graphic, but he occasionally falls into grammatical errors that we presume must be attributed to hasty writing. One of the most striking of these is his treatment of the word *decidua*, twice correctly as a singular noun and twice incorrectly as a plural noun on two consecutive pages. The volume is an excellent specimen of the printer's art, and the cuts, some of which are printed in color, are vividly illustrative of the text. The book is one that deserves to be closely studied by everybody who practices gynæcology.

A Manual of Practical Obstetrics. By E. P. Davis, A. M., M. D. With 140 Illustrations, two of which are colored. Philadelphia: P. Blakiston & Co., 1891. Pp. 297.

This book occupies a position midway between the elaborate manual and the so-called quiz compend, and has many of the advantages of each. It is of such a size that the young practitioner can easily slip it into his instrument bag, and this is no inconsiderable advantage to the timid and inexperienced. It is also so terse and clear in its descriptions that failure to understand them would be difficult for any one with sufficient intelligence to be warranted in practicing obstetrics. In fact, if we were asked to state the chief merit of the book we should unhesitatingly say its clearness. We know of no American teacher of obstetrics—we say it deliberately—who states the fundamentals in a manner that enables them to be more readily grasped and appreciated than as they are set forth by the author of this book. Of course the work lacks elaboration. A complete treatise, with exhaustive discussions of disputed points, was probably not intended in the author's plan of preparing his book, but for the purpose for which it was evidently designed—a hand-book for students and young practitioners—it is unexcelled. As it emanates from such a source, it is unnecessary to say that there is no clinging to outworn theories and practice; the ideas are those of modern, rational, antiseptic obstetrics.

BOOKS, ETC., RECEIVED.

Diseases of Women: a Manual of Non-surgical Gynæcology designed especially for the Use of Students and General Practitioners. By F. H. Davenport, A. B., M. D., Instructor in Gynæcology, Harvard Medical School; Assistant Surgeon to the Free Hospital for Women, etc. Second Edition, revised and enlarged. With Numerous Illustrations. Philadelphia: Lea Brothers & Co., 1892. Pp. xvi–25 to 323.

Cerebral Meningitis: its History, Diagnosis, Prognosis, and Treatment. By Martin W. Barr, M. D., etc. Detroit: George S. Davis, 1892. [The *Physician's Leisure Library.*]

The Uses of Water in Modern Medicine. By Simon Baruch, M. D., etc. Volume II. Detroit: George S. Davis, 1892. [The *Physicians' Leisure Library.*]

What to do in Case of Accident. By B. Merrill Ricketts, Ph. B., M. D., etc. Cincinnati: James Barclay, 1892.

A National System of Sanatoria; a Plea and a Prophecy. By Samuel S. Wallian, M. D., of New York. [Reprinted from the *Medical News.*]

The Operative Treatment of Goître. By J. Collins Warren, M. D., Boston. [Reprinted from the *Boston Medical and Surgical Journal.*]

Temperament: an Address. By David W. Yandell, M. D., of Louisville, Ky.

The Treatment of Tuberculosis of Bones and Joints by Parenchymatous and Intra-articular Injections. By Nicholas Senn, M. D., Ph. D., of Chicago, Ill. [Reprinted from the *Annals of Surgery.*]

On Resection of the Liver, especially for Hepatic Tumors, with the Report of a Successful Case of Resection for an Adenoma of the Bile-ducts, and a Table of Twenty Recorded Cases of Hepatic Operations. By W. W. Keen, M. D., Philadelphia. [Reprinted from the *Boston Medical and Surgical Journal.*]

Arterio-venous Aneurysm of the Common Carotid Artery and Internal Jugular Veins; Double Ligature of Both Vessels; Recovery. By W. W. Keen, M. D., Philadelphia. [Reprinted from the *American Journal of the Medical Sciences.*]

Nephrotomy for Calculous Pyelitis. Nephrectomy rightly decided against because of the Small Percentage of Urea; an apparently destroyed and Useless Kidney found to secrete over Four and a Half Times as much Urine as the other Kidney; Death. By W. W. Keen, M. D., and David D. Stewart, M. D., Philadelphia. [Reprinted from the *Therapeutic Gazette.*]

Glaucoma, its Nature and Treatment. By J. H. Woodward, M. D., Burlington, Vt. [Reprinted from the *Ophthalmic Record.*]

The Effect of Fluids on the Strength of Catgut. By D. B. Kyle, M. D., Philadelphia. [Reprinted from the *Therapeutic Gazette.*]

One Hundred and Fifty Circumcisions, and the Lessons they teach. By B. Merrill Ricketts, M. D., Cincinnati, Ohio. [Reprinted from the *Lancet-Clinic.*]

Conjunctivitis as a Cause of Poor Vision. By W. H. Bates, M. D., New York. [Reprinted from the *Post-graduate.*]

Treatment of Chronic Inflammation of the Mucous Membrane of the Eye, Ear, and Throat. By W. H. Bates, M. D., New York. [Reprinted from the *Virginia Medical Monthly.*]

Health and Happiness. By C. G. Davis, M. D., Chicago.

Effets physiologiques d'un liquide extrait des glandes sexuelles et surtout des testicules. Par M. Brown-Séquard. [Extrait des *Comptes rendus des séances de l'Académie des sciences.*]

Remarques sur les consultations externes et sur la statistique des opérations pratiquées à l'Hôpital Bichat pendant l'années 1890 et 1891, par Félix Terrier, chirurgien de l'Hôpital Bichat. 2me série: I, 1890; II, 1891. Paris: Babes et cie., 1892. [Publications du *Progrès médical.*]

Nouveau manuel opératoire de la trachéotomie. Par Dr. J. Glover. [Extrait des *Annales des maladies de l'oreille, du larynx, du nez et du pharynx.*]

New Inventions, etc.

A CHALAZION FORCEPS.

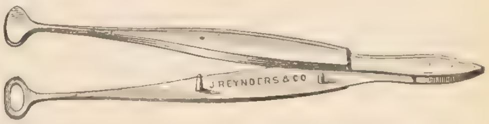
By W. J. Killen, M. D.,

BIRMINGHAM, ALA.,
LATE HOUSE SURGEON OF THE MANHATTAN EYE AND EAR HOSPITAL, NEW YORK.

Below is given an illustration of a forceps devised for the more convenient and less painful destruction of those bothersome little tumors, which are usually the result of some astigmatic error of refraction.

Every special practitioner on the eye knows from experience how inconvenient and clumsy it is to take the lid between the fingers, and the patient knows how very painful, even with cocaine anæsthesia, it is to have the incision made through the ciliary margin into the chalazion. When the operation is simply an incision on the conjunctival side of the tumor, with scraping out with a spoon, the unrestrained mobility of both the lid and the patient often renders the result unsatisfactory.

During my hospital experience and afterward it often suggested itself to me that a forceps would be of great assistance.



About a year ago I caused to be made my first chalazion forceps. It was like this improvement, except the tips were circular, the fenestra also, and there was no fixation attachment. The present forceps, which

J. Reynders & Co. made for me, is as follows: Strong-shanked forceps; shanks, three inches and a half long, and ending in oval flat expansions; diameters, five eighths of an inch by three eighths of an inch, one dilatation being fenestrated; the fixation attachment such that the blades fix or catch together while their ends are still a twelfth of an inch apart; this to prevent too severe pressure on the lid, the greater amount to be regulated by the fingers and judgment of the operator.

Now, the application and convenience of the forceps are patent. Cocaine having been instilled, the fenestrated blade is inserted on the inner or conjunctival side of the tumor, the solid flat tip on the external side of the lid; fix and evert the lid; the pressure tends to force the chalazion through the fenestra, and cocaine can so be injected subconjunctivally into the circumscribed area as to render the curved (◡) incision and the final scraping out of the tumor and pressure entirely painless, or practically so. After the incision the pressure on the blades of the forceps makes the use of the spoon for complete and efficient destruction of the chalazion complete.

I present this instrument to the profession in its improved form, hoping it may prove of some service.

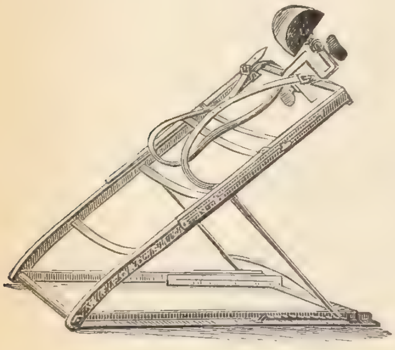
A HEAD AND SHOULDER SUPPORT FOR USE IN OPERATIONS UPON THE EAR AND UPPER AIR PASSAGES.

By E. B. Dench, M. D.,

AURAL SURGEON, NEW YORK EYE AND EAR INFIRMARY.

We are accustomed to inspect the ear with the patient in the sitting posture, and no little confusion results when we attempt to operate with the subject in the horizontal position.

In this latter position hæmorrhage is more free, and the blood collecting in the posterior portion of the tympanic cavity obscures the very portion of the operative field which we desire to inspect with the greatest care, and procedures simple in themselves become difficult and tedious.



The apparatus here shown consists of a metal frame, somewhat similar in construction to that devised by Dr. Krug, of this city, for securing Trendelenburg's position. The frame is made of iron, and is so arranged that it can be adapted to patients of every stature; when closed, it can be easily carried about, thus providing the operator with a means of securing a satisfactory position in operations at the home of the patient.

The horizontal portion of the device can be clamped upon an ordinary table, or fastened upon a sofa or bed by means of a strap. Anæsthesia is then induced with the patient in the horizontal position, after which the shoulders can be raised at any angle, and maintained in this position by elevating the frame upon which the shoulders rest. To make the position more secure, two straps are fastened to the cross-bar at the top of the frame, and these are passed beneath the arms, thus preventing the body from sliding downward. If the foot of the table is raised, the straps can frequently be dispensed with.

Rising from the center of the top bar is an arm which supports the head rest. This arm can be raised to any desired height above the level of the shoulder rest, while the head rest itself is attached to the arms by a ball-and-socket joint, thus admitting of motion in all directions; a set screw maintains the desired position when this has been secured.

My own experience with this device has been confined to its use in operations upon the middle ear, but I believe that it can be used with advantage in many of the operations within the nasal passages, pharynx, etc., when the use of a general anæsthetic becomes necessary.

In conclusion, I desire to thank Mr. C. E. Ford, of the W. F. Ford Surgical Instrument Co., for the care which he has taken in the construction of this apparatus.

17 West Forty-sixth Street.

Miscellany.

Cranial Surgery.—At a recent meeting of the Philadelphia County Medical Society Dr. William H. Morrison, of Holmesburg, reported three interesting cases.

The first case was one of linear craniotomy, an operation suggested some two years ago by Lannelongue, as possibly of service in certain cases of microcephalism and deficient mental development. In the case now reported thirteen months had elapsed since the operation, and the child showed a decided improvement in its mental and physical condition. The second case was one of epilepsy, in which there were certain somewhat indefinite localizing symptoms. Exploratory trephining was done nine months before the meeting, with negative results. The third case was one of abscess of the brain in which symptoms of compression of motor areas developed rather abruptly eight days after an injury to the head. The skull was at once opened, and an ounce of pus let out from beneath the dura mater. The patient had perfectly recovered.

Enterectomy for Obstructive Epithelioma.—At the same meeting Dr. J. M. Barton exhibited a patient on whom he had performed enterectomy for obstructive epithelioma five years before, and said: I do so for three reasons: First, as a permanent recovery from intestinal cancer; it is now nearly five years since the operation, and she is in perfect health. Secondly, to exhibit the apparatus which she wears on the intestinal fistula. Thirdly, to show the results, and to recommend the wider use of the method employed to re-establish the intestinal channel, particularly in cases of high obstruction.

I have opened the abdomen of this patient three times. First, on May 2, 1887, by a median incision, for severe recurring attacks of obstruction, which had lasted a year. An intussusception with adhesions was found, with a closely contracted ileo-cæcal valve at its apex. The intussusception was reduced, the colon opened, and the valve exposed and dilated. Some months later the symptoms of obstruction returned, and on November 1, 1887, six months after the first operation, I again opened the abdomen, this time by an incision similar to the one we now use for appendicitis, and found an epithelioma at the ileo-cæcal valve, nearly filling the entire caliber of the bowel. I removed three inches of the intestine, including the diseased portion, and immediately introduced Dupuytren's enterotome into the ends of the remaining bowel—viz., one blade into the ileum and one blade into the cæcum; the two blades were then brought together and the screw run down firmly, a heavy ligature being then placed around the two ends of the bowel, including the enterotome, to prevent the escape of fæces during the subsequent manipulations; after the abdominal wound was closed, this ligature was cut. In eight days the enterotome dropped off, having cut through the two contiguous layers of bowel; it was immediately reapplied to the spur, and three more inches divided, and after it was applied for the third time and had dropped off it had made a total incision of nearly nine inches in length. It was not until I had used a modification of Mr. Michael Banks's method, by a T-shaped arrangement of rubber tubing, that the results were entirely satisfactory. The specimen, which I will pass around, was examined microscopically by Dr. Morris Longstreth, and pronounced to be a cylindrical epithelioma. These two operations were reported in the *Journal of the American Medical Association* for May 5, 1888.

Some months later the patient detected a large gland in the mesentery, and for its removal I opened the abdomen for the third time on June 20, 1888, by a curvilinear incision, about ten inches in length, parallel with the edges of the ribs, and running back into the loin. She recovered as perfectly and as quickly from this as she had from the previous operations, and is now, and has been ever since, in perfect health, and quite able to do a full day's work at the washtub or elsewhere.

The fæcal fistula which remains gives her but little annoyance; with the aid of a compress and cork she is able to restrain all leakage, and finds it necessary to cleanse the parts but once a day. Her bowels are open once daily by the natural outlet, and her condition is quite comfortable—so much so that she declines any plastic operation for the closure of the fistula, though I know that she is not cowardly, and always regarded an abdominal section as a trifle.

This case is the last in which I used this method for re-establishing the fæcal circulation. Since then we have all been using bone, catgut, and rubber rings. But rings have had their day; the opening obtained by them is too small for anything except temporary use, it rapidly contracts, and the obstructive symptoms recur. In a case in which I shall have to operate in a few weeks I shall not use rings, but shall adopt the "four-inch" incision of Abbe, and I am so far from feeling certain that the four-inch incision will not contract too much that I regret I did not adopt this method at the primary enterectomy, three weeks ago, even though an anastomosis operation was afterward to be performed.

In most of our enterectomies for chronic obstruction the patient is frightfully exhausted before we have the opportunity of operating, and the best authorities now agree that the removal of the affected intestine and the establishment of a temporary artificial anus is all that we can hope to do at the primary operation, leaving the re-establishment of the intestinal circulation to be accomplished at a second operation after the strength of the patient has been restored.

Now, if the obstruction is high up in the intestine and an artificial anus is made, it is quite questionable if, from the intestine above the artificial anus, the patient will ever absorb nourishment enough to gain the necessary strength to have the anastomosis operation performed. But, if Dupuytren's or some similar clamp was used at the primary operation (its adjustment does not take thirty seconds), within a few days some of the nourishment would pass to the lower intestine, and when the strength has been re-established the anastomosis operation could be performed, if desired. The application of the clamp does not prevent the immediate and continuous use of the artificial anus.

Laryngectomy.—At the same meeting Dr. J. Solis-Cohen showed a patient from whom the larynx and upper ring of the trachea had been removed for malignant growth projecting externally, and made the following remarks:

Nineteen years ago this patient, a teamster, then twenty-five years of age, found that he was having some hoarseness of voice, which soon became associated with dyspnœa. This dyspnœa increased in the course of three years to such an extent that he was hardly able to breathe. He then came under the care of Dr. Lefferts, of New York, who found a large papilloma in the larynx, which growth he removed piecemeal by intralaryngeal procedures. Dr. Lefferts reported the case in 1876, in the New York *Medical Record*, and I pass around a copy of that journal showing a picture of the growth at that time. For ten years the man remained in continuous comfort. Then recurrence of his former troubles ensued, and he had more or less difficulty for several years, and underwent various treatments. About a year or so ago he began to be much worse, and in January he applied for relief at the dispensary of the Jefferson Medical College. At that time he was suffering with great dyspnœa, a good deal of pain, cough, difficulty of expectoration, and difficulty in swallowing. The picture of his larynx was almost exactly a reproduction of the picture that I have passed around, and which was taken in 1876—that is, sixteen years ago—with this exception: that the growth, which occupied a large portion of the left side of the larynx, almost occluding it, was white instead of red, and had not that characteristic papillomatous appearance. The growth had penetrated the larynx exteriorly and projected externally in a mass larger than an almond.

The history of this case led me to believe it to be a redevelopment of papilloma *in situ*, and not a recurrence. The dyspnœa was very great, and I made an appointment to perform tracheotomy promptly; but, being suddenly attacked with influenza, W. S. Forbes performed the operation for me at his own clinic, and inserted a tube. This precautionary tracheotomy was performed because I did not consider it safe to attempt a removal of the growth with forceps until we had provided a safety-valve below by means of the tube. Three or four weeks later I attempted to remove the growth by intralaryngeal procedures. It was easy to catch hold of it with large forceps, and I removed a very curious-looking structure, more than an inch in length and one third of an inch in width, which looked much like a piece of codfish-skin. After examining it I came to the conclusion that the forceps had grasped the tumor, but, unable to remove it, had peeled off the thickened epithelium. This was given to a microscopist to examine, and was subsequently reported to be a sarcoma. Finding that we could not remove the growth with forceps, we took the patient before the class, where, with the assistance of Dr. Forbes, I excised the external growth and then split the larynx and removed every portion of the internal growth, afterward scraping the parts thoroughly. The masses removed were subsequently reported to be sarcoma. The case did well for four weeks, when recurrence took place, and in less than two weeks the growth became almost as large as at the time of the original operation. It grew more and more rapidly, and again protruded through the necrosed thyreoid cartilages.

After explaining to the patient the dangers connected with a radical procedure for extirpation, and after consultation with the surgical members of the Faculty, I decided to excise the larynx. This operation was performed on Friday, April 1st, with the assistance of Professor Keen, and of Dr. O. Horwitz, chief of the surgical clinic.

The day before the operation I had the opportunity, through the courtesy of Dr. Forbes, to perform the operation on an uninjected subject. Dr. Forbes at that time made a suggestion which was carried out in the operation, and the excellent result of which you will see presently. This suggestion was that after the larynx was removed the anterior portion of the trachea should be split longitudinally for two or three rings, and that the lips so formed should be stitched to the skin anteriorly, so as to present forward and keep the trachea in a favorable position.

There was a good deal of difficulty in the operation owing to the cicatricial tissues and other changes of structure and relations of parts which had resulted from the previous operations. I was, therefore, unable to tie the laryngeal arteries before the extirpation, as I had proposed to do, but Dr. Keen and Dr. Horwitz looked after the bleeding while I went ahead with the excision. The incision was made everywhere through healthy structure. The diseased skin and inclosed morbid mass were circumscribed by elliptical incisions in sound skin joining a vertical incision from the hyoid bone above and region of the tracheal cannula below; and then a transverse incision was made at the level of the hyoid bone so as to make a T-shaped incision and two lateral flaps. The incision was carried down to the periosteum, and the soft parts were then separated with Allis's dry dissector, which answered admirably. During this time anæsthesia was carried on by chloroform through the tube by means of a funnel and an India-rubber tube. When the larynx had been separated from the soft tissues, and I could get my fingers around it, I removed the ordinary cannula and inserted a tampon cannula to prevent, as much as possible, any entrance of blood into the air passages. For this purpose I used the von Trendelenburg cannula, but not the Trendelenburg system. Trendelenburg uses a rubber bag inflated with air. Air or water bags are very often opened by puncture during the operation. An hour or two before the operation I moistened a piece of ordinary surgical sponge and secured it around the cannula, and over this tied a bulbous India-rubber tube. I have here the cannula undisturbed; and, although fifty-six days have elapsed since it was prepared, you see that the tampon is still perfect, and sufficiently pliable for immediate use.

The patient's head was lowered as soon as this cannula was introduced, and anæsthesia was subsequently kept up through the tampon cannula, which leaked a little despite all efforts to prevent it. The epiglottis being healthy, I made an incision through the hyo-epiglottic membrane and cut the epiglottis square off. The larynx was then tilted forward. Knowing that there has been difficulty in nourishing patients after this operation, I determined to save the entire œsophagus, if possible, instead of severing it at the level of the cricoid cartilage, and by careful manipulation I was able to strip the œsophagus and the mucous membrane from the tips of the arytænoid cartilages and larynx down to the base of the first ring of the trachea without perforating it.

The larynx, with the first ring of the trachea attached to it, was then severed from the trachea, and the trachea was stitched to the skin in two flaps formed by the sides of the original tracheotomy incision, which had embraced the second and third rings. The soft parts were then brought loosely together with sutures, without any dressing in the pharynx; and a small, soft-rubber stomach-tube was inserted into the stomach through an opening left in the upper portion of the dressing. This was inserted, thinking that there might be a necessity to use it for introducing nourishment; but it was found unnecessary, and it did some harm. An hour had been occupied in the whole procedure—anæsthetization, operation, and dressing. The patient was then put to bed. He was carefully watched. I stayed with him for sixteen hours; and during that time I instructed a number of young men connected with the throat and surgical clinics of the hospital how to take charge of the case. Two members of these staffs were with him constantly for eighty hours. Twice during that time the man would have died had not skilled hands been present to remove mucus from the tracheal tube. It is to the close attention of these young men for the first eighty hours, and to the admirable service of our chief surgical resident, Dr. Hager, that this man chiefly owes his life, for the attention after such an operation is far more important in a clinical point of view than the operation itself, all-important as it is. There was a good deal of oozing alongside of the œsophageal tube. On the third night this tube became detached and we did not reintroduce it. Enemata were used for four or five days, and then we gradually began to give food by the mouth. At each attempt at swallowing, a piece of gauze was applied above the tracheal wound and the parts were pressed close together while the patient swallowed. There was a little trickling for a few days, but this ceased. It was interesting to watch the œsophagus during swallowing, before the external wound contracted. It was easy to see that the œsophagus opened when the man took water. There has been some doubt whether there is a mechanical distention of the mouth of the œsophagus in glutition, or whether there is some such action of the œsophagus itself. In this case it certainly did open to receive the water. The man has made an uninterrupted recovery. There has been no attempt made to use a voice-tube, and for two reasons. In the first place, I know of no one in this city competent to make one, and, in the second place, I do not wish to put anything into the wound that would irritate it until there remains no doubt in regard to the question of recurrence.

You will notice in examining this patient that there is now no connection between the trachea and the nose. I wish here to call attention to an important physiological point. Of late years a number of German surgeons—Aschenbach and others—and notably MacDonald, of London, and Bosworth, of New York, have been making experiments in reference to the physiology of nasal respiration by the use of tubes, etc. They assert that the air of respiration becomes fully saturated with moisture in the nose, and that consequently, being saturated when it enters the lung, it can receive no moisture from the lung. Therefore, they say, physiologists are wrong in stating that moisture is exhaled from the lung. In this case there is no connection whatever between nose and lung; and if you take a mirror and hold it over the tracheal opening you will see that it becomes covered with moisture. In this case the lungs do exhale moisture. Of course, here the conditions are different from the normal. I only wish to call attention to this point, as it seems to show that the older physiologists were right. There is still a small fistula above, which I think will close without difficulty, but it has no connection whatever with the trachea.

From the history of this case, I took it for granted at first that it was a papilloma recurring upon the seat of a former growth; but when a portion of it was examined by a microscopist it was pronounced sarcoma.

After extirpation of the larynx the growth was pronounced to be a cylindrical epithelioma, or a destructive adenoma or adeno-carcinoma invading the arytænoid and thyreoid cartilages as well as the soft parts. You see it here in the specimen, nearly filling the cavity of the larynx, proceeding from the left side mainly but extending slightly to the right side and penetrating necrotic portions of both wings of the thyreoid cartilage so as to present externally and involve the cutaneous surface likewise. Whatever it may be, there is no doubt of its malignancy.

The question whether benign growths are ever transformed into malignant ones is important. It is the generally received opinion that benign growths are sometimes, by further irritation, converted into malign tumors. A collective investigation into the subject by Semon, of London, has shown the fallacy of this opinion as far as it refers to laryngeal neoplasms. Certainly there was in this case no conversion of a papilloma into a malignant growth. The malignant growth became developed many years later upon the site from which a benign growth had been removed.

There is one clinical point that has been a revelation to me; and that is the freedom from pain, freedom from cough, and freedom from dysphagia. Should there be no recurrence in this case, we have every reason to be satisfied with the result. Should recurrence ensue, the patient will have been relieved from suffering for some time.

A number of years ago, when I investigated this subject, I was opposed to the operation in the main, as I am still. This is an exceptional case; and it is only in exceptional cases that laryngectomy should be performed. At that time Dr. Czerny, of Heidelberg, wrote to me that if I could only see some of his patients and witness how free from pain they were, I would believe that the operation was a justifiable one. This case verifies his remark. The patient is now happy, whereas for many months before the operation he had been miserable.

The man is wearing a single rectangular-like tube with as little paraphernalia about it as possible.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

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Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

THE NEW YORK MEDICAL JOURNAL, JULY 16, 1892.

Original Communications.

CONTRIBUTIONS FROM THE SURGICAL SERVICE OF ST. MARY'S FREE HOSPITAL FOR CHILDREN.

By CHARLES T. POORE, A. M., M. D.,
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III.

OPERATIONS UPON THE KNEE JOINT

from 1877 to March, 1892.

By excision is meant that the joint has been opened, and the ends of the bones have been removed, without any reference to their pathological condition; by erasion, that the joint has been opened and only diseased tissue has been removed, whether in the soft parts or bone, without any formal removal of the articular ends of the bone. Twenty-eight joints have been excised, five have been erased, and in nine cases have the articular ends of the bones been operated upon.

I. EXCISION.—CASE I.—H. McG., sixteen years of age, has had disease of the left knee joint since he was sixteen months of age, following an injury. An abscess formed and discharged for seven years. The tibia was dislocated backward and the joint immovable.

June 9, 1877.—Joint excised; ankylosis found to be fibrous. Several sections had to be made in order to bring the leg into a straight line with the femur. The cut sections showed evidence of old abscess. Bones wired together. Posterior splint and plaster of Paris. Some suppuration.

July 20th.—Carious bone removed; wires removed.

October 1st.—Discharged cured; wound sound; shortening, four inches.

Heard from on December 8, 1877. Patient was well. More than half of the shortening was due to arrest of growth.

CASE II.—J. S., thirteen years of age, had rheumatism eight years ago. Three years ago the right knee began to get stiff and became flexed. Eighteen months ago it began to swell, and an abscess formed over the tibia. Later the knee and thigh became swollen, and an abscess opened above the joint. Later the left knee became stiff. There is found to be a dislocation of the right tibia backward, a sinus over the upper end of the tibia, the patella is ankylosed, and the limb flexed at a right angle. There is pain in the knee and tenderness on pressure.

November 15, 1879.—Joint excised. Section had to be made beyond the epiphyseal line in order to bring the leg into position. There was found an abscess in the head of the tibia, communicating with the joint by a small opening. Bones wired together; rubber drainage-tubes. Limb placed in a posterior splint, and secured with a plaster-of-Paris bandage.

Some suppuration followed. Silver wire removed under ether; wound firmly closed; bony ankylosis; shortening, two inches.

The patient has been seen within a year (1892). He has good use of the limb. The other knee joint has become ankylosed. He is an architect, and is able to follow his occupation with little trouble. He does not use a high shoe.

CASE III.—J. R., aged ten years, admitted January 10, 1882. Had disease of the right knee joint when very young, followed by abscess. The tibia is dislocated backward and ankylosed. There are no sinuses open.

February 15, 1882.—Joint excised by removing a V-shaped piece, including the ends of the tibia and femur. A point of old disease was found in one condyle of the femur. The joint cavity had been obliterated and bony ankylosis existed. Bone united with wires; posterior splint applied, and over this plaster of Paris; rubber drainage-tubes.

Discharged on July 2, 1882. Union firm; shortening, an inch and a half. There has been some suppuration.

CASE IV.—M. F., twelve years of age, has had disease of the left knee joint followed by abscess, and, from the appearance of the parts, considerable destruction of the skin over the joint. The tibia is dislocated backward. The patient has complained at times of pain over the outer condyle of the femur, and there is some tenderness on pressure at this point. There was bony ankylosis. Excised on March 11, 1881. A V-shaped piece was removed. In the outer condyle of the femur there was found quite a large mass of caseous material.

Bones united with wire sutures, rubber drainage-tubes, posterior splints, etc. There was some sloughing of the inner side of the upper flap, and later a limited necrosis.

The patient was discharged cured on November 1, 1881. Union firm; shortening, two inches.

March 3, 1888.—Was seen to-day. Shortening, two inches and a half.

CASE V.—H. S., six years of age, has disease of the spine in the lower dorsal region. Five years ago he injured his left knee. This was followed by pain and an abscess below the tubercle of the tibia, which has continued to discharge ever since. After a time the knee joint began to swell, became flexed, and has continued painful up to date of admission. Bone can be detected through sinus in tibia, and this bone is dislocated.

May 12, 1882.—Joint excised. There was found some disease of the synovial membrane; a carious point in the intercondyloid notch. There was a sinus in the head of the articular surface of the tibia, leading into a cavity in that bone. The cartilage had a worm-eaten appearance in places. On removing a section from the tibia, a cavity was opened of about an inch by half an inch in size, bounded by sclerosed bone and containing tubercular material. This cavity also opened on the free surface of the tibia. The section of the femur was through healthy bone. The cavity in the tibia was cleaned out. Ends of bone united with wire, posterior splint, and plaster of Paris; rubber drainage-tubes. There was considerable suppuration, and a slough of a portion of one of the flaps.

In October a sinus was curetted.

17th.—Patient discharged cured. Shortening, an inch and a half; one small sinus.

December, 1887.—Seen, and shortening found to be an inch and three quarters. All wounds have remained closed.

CASE VI.—G. R., twelve years of age, was admitted on February 17, 1882, with the left knee occupied by a boggy, fusiform swelling; skin very much blanched; he complains of but little pain, and it can be handled without any complaint from the patient. The limb was kept at rest, but the swelling gradually increased, and finally an abscess formed and opened above the articulation.

October 30, 1882.—Joint freely opened and tubercular matter cleaned out; and again in February, 1882, but with no permanent improvement.

May 7, 1883.—Joint excised; the under surface of the patella was carious; the cartilage is much diseased. Section of the femur below the epiphyseal line showed diseased bone; one higher up was almost healthy in appearance; the same condition was found in the upper end of the tibia. Bones wired together; posterior splint and plaster-of-Paris bandage. After curetting sinuses several times, wounds closed and firm ankylosis was obtained. Patient developed caries of spine, and finally general tuberculosis, of which he died in 1887, four years after the operation, the knee continuing sound and useful, an inch and a half short.

Case VII.—J. H., six years of age, admitted May, 1883. Patient fair and delicate-looking. The knee was occupied by a fusiform swelling; tissues blanched and of a boggy feel.

May 28, 1883.—Joint excised; cut surface of femur healthy; that of the tibia infiltrated and soft; considerable tubercular tissue in joint cavity. The wound never did well; disease advanced in the tibia and suppuration was considerable. Patient died May, 1884, from tubercular tumor of brain, the wound never closing.

Case VIII.—L. S., three years old, admitted April, 1883. Injured the knee five months before admission. Joint much swollen and also the middle of the thigh. There is a sinus over the tibia near the joint, from which there is a constant discharge. A probe passed into this sinus enters a cavity lined with carious bone and then into the joint.

June 1, 1883.—Joint opened. There was found a sinus on inner head of the tibia leading into the cavity in that bone. The cartilage over the femur was slightly diseased, and the bone just above the cartilage on its anterior surface had a worm eaten appearance. There was an abscess between the muscles on the anterior aspect of the femur as far as the middle of the thigh. Sections from the femur present a healthy appearance; that from the tibia opened into the cavity mentioned above; this was thoroughly cleaned out. Bones united with wire; drainage-tube, posterior splint, and plaster-of-Paris bandage. The wound did well; there was some suppuration.

In October a small sequestrum was removed from the cavity in the head of the tibia; after this the wound closed.

Later she developed caries of the spine in dorsal region.

In January, 1884, suddenly developed severe pain in chest, high temperature, then cough, and expectoration of fœtid pus. She died March 6, 1884. The knee joint was well at time of death.

Case IX.—R. P., three years of age, admitted March, 1883, with disease of left knee joint. Abscess opened under extensor muscles in June.

In November carious bone was detected in the external condyle of the femur.

December 1st.—Joint excised; cavity filled with tubercular matter and external condyle extensively diseased; both sections through healthy bone, except the external condyle. Bone wired; drainage-tube, posterior splint, and plaster-of-Paris bandage. Wound did well up to a certain point; there was bony ankylosis; but sinuses remained notwithstanding free curetting several times. He was discharged October 14, 1885, with firm union, but some sinuses.

Case X.—A. J., twelve years of age, was admitted with disease of left knee joint. The whole joint was swollen, fusiform in shape; tissues white with boggy feel.

June 1, 1885.—Joint excised; the cavity was filled with tubercular material; cartilages eroded; the head of the tibia was diseased, as well as the femur and patella. The cut ends of bones had a healthy appearance; all infected tissue was removed as thoroughly as possible.

Patient never did well, and died January 1, 1886, of general tuberculosis.

Case XI.—M. M., thirteen years of age, was admitted October, 1885, with the history of trouble in the left knee for four years; there are many scars about the joint; there is some pain and she can not walk without aid; the limb is flexed; dislocated. Pressure over the inner condyle is painful.

November 14th.—Joint excised; patella was ankylosed; there was some adhesion in the joint. Cartilages did not show much evidence of having been diseased. While removing the cartilage in order to get at a bony surface, an abscess occupying almost the whole epiphysis of the tibia was found and a section removed. An opening was then found through the epiphyseal cartilage leading to another abscess cavity in the shaft. A similar condition was found in both femoral condyles. Cavities cleaned out. Bones united by nails; rubber drainage and dressing as in other cases.

February, 1886.—There has been no suppuration. Union firm. Shortening, an inch and a quarter.

December, 1887.—Limb in good condition. Walks well. No change in length of limb.

Case XII.—E. H., nine years of age, fell one year ago and injured left knee, followed by pain and swelling. Tibia dislocated. Admitted December, 1885.

December 5th.—Ether. Joint excised. Patella ankylosed. Bones united by fibrous ankylosis. Enough bone removed to correct deformity. Bones united by nails. Drainage.

April 9th.—Has developed high temperature. Suppuration.

May 10th.—There is considerable amount of disease of the femur. Bone re-excised.

March 26, 1887.—All attempts to limit the trouble in the bone have failed. There has been for some time much suppuration which is beginning to tell on patient's general condition. Amputation to-day performed at the junction of the lower with the middle third.

Patient was discharged in May. Stump sound.

Case XIII.—L. G., eleven years of age, was admitted June 4, 1886, with a history of disease of the left knee for six years. Joint is flexed and tibia dislocated.

October 13th.—Joint excised. An old abscess was found in the upper end of the tibia. This was thoroughly curetted so that only a shell of bone was left. The bones were nailed and the abscess cavity was drained by a separate opening. Posterior splint, etc.

The wound closed and there was no suppuration.

In February he fell and refractured the leg at the point of operation.

Discharged March, 1887. Shortening, three quarters of an inch.

Patient died of diphtheria in July, 1887. Limb sound at date of death.

Case XIV.—E. B., eight years of age. Infantile paralysis of left limb; the limb is useless on account of flail-like condition of knee. Admitted October 11, 1886.

November 11, 1886.—Joint excised in order to obtain a stiff joint. Nails and rubber drainage and dressed as in other cases.

November 3, 1887.—Healed. No suppuration. Bony union.

Case XV.—A. H., aged seven years. Admitted April 4, 1887, with disease of left knee of three years' duration. Abscess and sinuses. Limb contracted and tibia dislocated. Condition poor.

May 27, 1887.—Excised. During operation heart failed somewhat, but when returned to bed was in fair condition. Died suddenly the next morning.

Case XVI.—K. D., eight years of age. Admitted July 20, 1887, with disease of right knee following an injury one year ago. Two weeks ago fell again; knee painful and swollen. Rest and extension.

June 9, 1888.—Excised. Joint completely disorganized; articular cartilages gone. There was a caseous mass of considerable size in the internal condyle of the femur. Cavity cleaned out. Nails, drainage-tubes, and dressings as usual.

August 3d.—As there is considerable suppuration and tubercular granulation, the sinuses were curetted.

October 31st.—Curetted again.

November, 1889.—Developed spinal disease and died at home, of meningitis, in December, 1889. Sinuses in about point of operation.

Case XVII.—K. F., fifteen years of age. Admitted September 28, 1887. Disease since she was two years of age. Tibia dislocated backward and leg flexed at a right angle. Walks with a crutch.

October 10th.—Joint excised. Articular surfaces of bones deformed. The joint surfaces were eroded, cartilage gone, and patella diseased; enough bone removed to correct deformity. Bones united with nails.

31st.—Wound healed.

November 15th.—Union firm.

January 15, 1888.—Discharged cured. Shortening, three quarters of an inch.

Case XVIII.—D. F., eleven years of age. Admitted January 11, 1889. Limb useless from infantile paralysis. Walks with a crutch.

February 13, 1889.—Joint excised.

August 31st.—Discharged. Union firm. Can walk without a crutch or cane.

Case XIX.—F. H. (See erasion, Case II.)

April 29, 1890.—Disease has returned in the joint. Was taken to operating room in order to curette the parts, but disease of the bones was found, so that a regular excision was done. Nails. Posterior splint.

September.—Discharged.

February 24, 1891.—Has returned. Some slight flexion.

March 11th.—Osteotomy. Discharged April 20, 1891.

February, 1892.—On inspection, union firm. No bending.

Case XX.—B. B., aged five. Admitted November 14, 1890. Fell one year ago and injured right knee; about two weeks ago fell again. On admission, there is an abscess connected with the knee joint which has opened and discharged considerably; condition poor.

November 15th.—Joint excised, and found completely disorganized; bones not much involved. Thin sections removed from femur and tibia; bone united with nails; posterior splint and usual dressings.

22d.—Wound has reopened.

29th.—Ether; and parts curetted on account of the presence of tubercular tissue.

February 6, 1891.—Wound all healed; union firm; patient discharged; shortening slight.

January, 1892.—Returned to hospital; has good use of limb; union firm; no change in the length of the limb.

Case XXI.—M. R., aged five years. Admitted September 15, 1890; disease of knee three years and a half; limb flexed and painful and tibia dislocated.

January 2, 1891.—Joint excised; abscess in external head of tibia; bone sclerosed about the cavity of an old abscess; cartilage over external condyle of femur eroded and bone slightly diseased; patella diseased in its center; joint surfaces bound together with connective tissue. Thin sections removed from femur and tibia; nails; horse-hair drainage.

16th.—Incision closed.

March 19th.—Union not as firm as desired.

October.—There is some flexion at point of section.

January, 1892.—Osteotomy.

Case XXII.—C. T., aged five years. Admitted April 22, 1890. Patient fell four months ago and injured left knee; knee has been in plaster of Paris for several months; has been getting worse; swelling has increased, and he has had much pain.

January 26, 1891.—Joint erased. (See Case IV, erasion.)

October 2d.—Joint excised, so as to get bony ankylosis.

January 2, 1892.—Osteotomy on account of some bending.

Case XXIII.—J. L., aged twelve years. Admitted April 14, 1891. Has had disease of left knee for seven years. The tibia is dislocated backward and the joint flexed to an angle of 36°.

April 22, 1891.—Joint excised; transverse skin incision above patella; cavity of the joint was obliterated by adhesions; cartilage not destroyed; articular surfaces deformed by pressure, so that it was impossible to correct the deformity without an excision. Enough bone removed from the femur and tibia to permit the tibia being brought into a straight line with the femur; nails; no drainage-tube; no posterior splint.

May 4th.—Nails removed.

July 13th.—Patient discharged; union firm; shortening slight.

Case XXIV.—I. A., aged fourteen years. Admitted July 27, 1891. Disease seven years; several sinuses; limb flexed; tibia dislocated backward.

August 10, 1891.—Joint excised; much bone had to be removed in order to allow the leg to be placed in position. There was not much disease of the bone, but much in the soft parts about joint; nails used. Disease returned in the ends of the bone, and, although there was firm bony union, there have persisted four sinuses leading down to diseased bone; these have been curetted four times, but there has never been any attempt at repair, but rather the disease in the bone advanced. The limb was amputated at the junction of the middle with the lower third of the thigh, February 1, 1892.

March 12th.—Wound all closed.

Case XXV.—H. McD., aged two years. Admitted September 2, 1891, with disease of the right knee joint following injury. There are found three sinuses on tibia; from all there is a profuse discharge. Joint much swollen. Tibia dislocated.

October 7th.—Joint much diseased: supracondyloid space filled with tubercular matter. There was an opening into the joint from an abscess in head of tibia; its walls were partly osseous and partially cartilaginous; abscess cavity thoroughly curetted; wound closed; drainage-tubes; posterior splint. Patient contracted scarlet fever; wounds all closed and union firm; was sent to Willard Parker Hospital and died.

Case XXVI.—C. N., aged eighteen years. Admitted August, 1890, with disease of right knee, following an injury; joint much swollen and contracted.

February 4, 1891.—Joint excised; several small abscesses found in the joint; the bone was diseased, inner condyle and head of tibia, also the middle of the patella. Thin slices removed from ends of bone; horse-hair drainage; nails.

February, 1892.—Union has been delayed, but is now firm.

Case XXVII.—A. G., aged nine years. Was admitted January 29, 1889. About three years and a half ago was knocked down and injured right knee; joint soon began to swell, and she has continued lame ever since. The knee is found greatly swollen and leg flexed.

February 1, 1889.—Ether; an abscess found in joint; the synovial membrane and bone diseased; excised; rubber drainage-tube; silver wire and posterior splint.

March 22d.—Patient up.

June 18th.—Sinus scraped.

October, 1889.—Patient discharged; union firm.

Case XXVIII.—H. B., six years of age. For history, see epiphysitis, Case VIII, erasion.

The point of epiphysitis has only a sinus; limb can not be straightened.

January 15, 1892.—Ether. U-shaped incision. On laying open the joint, it was found that the condyles of the femur had become elongated and overlapped the tibia. The joint showed but little symptom of disease; the synovial fringes were thickened and congested; the subcrural sac was thickened. There is no connection between the abscess cavity and the joint. The abscess cavity extended up to the epiphyseal cartilage; the anterior wall of this cavity was removed so as to leave a wide opening with sloping side into it. The flap was brought down and nailed to the bottom of this cavity.

Thin slices were removed from femur and tibia until the leg could be brought up. No nail. Iodoform drainage, then splints.

Erasion.—Case I.—M. H., aged seven years, admitted May 23, 1888. Five years ago left knee became swollen and painful. Two years ago injured lower knee, and since then has had much more trouble; limb flexed.

June 13, 1888.—Joint opened; cartilage not diseased, but joint cavity filled with tubercular granulation. This was removed with synovial membrane. Articular surface of patella diseased; was scraped; wound closed; rubber drainage; no nails.

October 11, 1888.—Patient discharged cured; walks well; no pain.

1890.—Patient seen and is all right.

Case II.—T. H., aged four years, admitted March 10, 1890. Joint swollen and limb much contracted.

April 9, 1890.—Joint erased. See Case XIX, excision.

Case III.—L. D., five years of age. Three years ago fell and injured right knee. For eighteen months wore plaster-of-Paris splint. Four months ago abscess; sinus still discharging.

May 26, 1890.—Joint erased; long longitudinal incision; diseased bone found and scraped; old sinus curetted; rubber drainage-tube. Patella diseased and removed.

February 2, 1891.—Two sinuses curetted; tubercular tissue.

January 13, 1892.—Union firm; sinuses all closed; no apparent shortening.

Case IV.—C. T., aged five years, admitted April 22, 1890. Fell four months ago; injured left knee; has been in plaster-of-Paris splint.

January 26, 1891.—Joint erased; much disease in subcrural sac; abscess above patella; no disease of the bone; horse-hair drainage; posterior splint.

July 11th.—Knee bending.

October 2d.—Knee excised. See Case XXII, excision.

Case V.—N. O. C., twelve years of age, admitted February 1, 1891, with disease of right knee of ten years' standing; she has worn a splint for some years. The leg is flexed, shortened; there is some flexion, but extension beyond a certain point is impossible; patella ankylosed; the limb is useless for walking.

February 5, 1891.—Joint opened; the cavity is obliterated by adhesions. There was disease only on the inner portion of the joint—namely, the posterior aspect of the inner condyle of the femur and the inner head of the tibia. The internal condyle of the femur was eroded on its posterior aspect. There was a cavity in it containing a calcareous nodule about the size of a pea surrounded by sclerosed bone. The condyle was altered in shape, being elongated upon its outer edge; it was also thinned in its antero-posterior aspect and about an inch longer than normal. The cartilage over the inner head of the tibia was destroyed over its middle and outer segment, where there was a funnel-shaped sinus leading to a cavity in the shaft of the tibia about three quarters of an inch in diameter. This was filled with very tough connective tissue, very adherent to its walls. The articular surface of the inner head was much lower than that of the outer, and was in contact with the posterior surface of the internal condyle of the femur, the free elongated end of the latter overlapping the tibia, so that extension beyond a certain point was impossible. The patella was firmly ankylosed to the femur. The joint cavity was cleaned out. A section was made from the inner condyle so as to allow its end to come into contact with the inner head of tibia. The cartilage was removed from the outer aspect of the articular surface of both bones, the ankylosed patella removed, and the cavity in the head of the tibia cleaned out and filled with decalcified bone.

Horse-hair drainage, posterior splint, and usual dressings.

March 22d.—Wound entirely healed, no suppuration; union quite firm.

May 28th.—Discharged with posterior splint, as there was a tendency for the parts to yield.

January, 1892.—Union firm, walks well.

Epiphysitis.—Case I.—E. P., aged seven years. Three years ago had an abscess at anterior aspect of thigh; pain and swelling of right knee joint; leg became flexed at a right angle. Admitted May 27, 1881. There is found a sinus just above knee joint on the anterior aspect of the thigh; the femur is considerably enlarged; the leg flexed at a right angle with the femur and can not be extended; there is no ankylosis; there is a slight discharge from the sinus.

June 20, 1881.—Ether. A probe passed into the sinus entered the femur and then the knee joint. The sinus in the soft parts was enlarged so as to admit the finger into the knee joint. There was discovered a point between the condyles of denuded bone, being the point of termination of the sinus above mentioned within the joint cavity. On removing the anterior wall of the sinus in the bone down to the joint, in a cavity was found a round sequestrum about the size of a hazel-nut. Wound stuffed and allowed to granulate.

December 28, 1881.—Patient was discharged; wound closed; joint flexed, as friends refused to have anything done.

1890.—Patient returned to hospital; limb straight; motion at the knee joint normal.

Case II.—T. H., aged eleven years, admitted October 17, 1887. Seven weeks ago was struck on leg, just below the knee, followed by much pain and some swelling of the knee joint. Abscess formed and opened. On examination, the upper portion of the leg, just below the knee joint, is swollen; there is a sinus from which there is quite a discharge of pus.

October 21st.—Ether; sinus enlarged; there is an opening in the tibia on the inner side of the tubercle through which loose bone is detected. There is considerable flexion of the leg on the thigh. Pieces of necrosed bone. The upper limit of the abscess cavity in the head of the tibia reaches the epiphyseal cartilage. Cavity curetted; rubber drainage-tube.

January 16, 1892.—Wound will not close; ether; the anterior wall of abscess cavity removed.

June 4th.—Still open. Neuber's operation of implantation of a skin-flap performed.

July 14, 1888.—Wound all closed. Patient discharged cured.

1890.—Has been seen, and has no further trouble.

Case III.—N. D., aged twelve years. Admitted April 30, 1888, with the following history: Three weeks ago she struck her right knee against a chair; this was immediately followed by pain when she attempted to flex the limb. There is found a tender point over internal condyle of right knee and some slight swelling.

She was kept at rest with a posterior splint for six months, but there has been no improvement, but rather an increase of pain and more deep swelling.

December 15, 1888.—Ether, and internal condyle of femur trephined over tender point. The bone at this point is found inflamed over a circumscribed area, and surrounded by a limiting osteitis.

March, 1889.—Pain has long since ceased. Patient has been about with posterior splint, and to-day is sent home.

October 17, 1890.—Has been seen to-day and is perfectly well.

Case IV.—E. R., aged eleven years. Admitted May 6, 1889. Two months ago was struck on knee; since then she has had pain over external condyle of the femur so as not to be able to go about. Treatment: rest and sea-side.

October 8th.—Patient no better, but rather worse. External condyle trephined and diseased bone found.

December 7, 1889.—Discharged cured to-day; no pain.

Case V.—R. F., aged six years. Admitted August 25, 1890. Three weeks ago was struck on left leg just below knee. An abscess formed and opened. There has been pain in the part ever since. On admission, there is found thickening and a sinus.

September 15th.—Ether. There is a small abscess over the crest of the tibia, three inches below the knee joint. On opening this a sinus was found in the bone leading to a cavity in the head of the tibia, just below the epiphyseal cartilage, and in which a sequestrum about the size of a chestnut was found. Cavity stuffed with iodoform gauze.

December 31, 1890.—Wound all closed. Patient discharged.

Case VI.—L. M., eleven years of age. Admitted June 29, 1891. Two years ago had a fall, later an abscess, which opened over the internal condyle of the femur. There has been pain at this point and the knee is slightly flexed, and there is pain in walking. There is some swelling over the point of disease.

July 23, 1891.—Ether. An incision was made over the point of disease and a sinus found leading into a cavity in the internal condyle of the femur which contained dead bone. Cavity scraped, disinfected, horse-hair drainage. The knee is found to be the seat of fibrous ankylosis, which is broken up, and a straight splint applied.

October.—Discharged cured.

Case VII.—M. M., six years of age. Admitted October 26, 1891. Right knee swollen. Has also disease of left ankle joint which has been operated upon elsewhere.

There is considerable tenderness on pressure over the external condyle of right femur. Pain at night and some swelling in knee joint.

October 30th.—Ether. External condyle trephined above the epiphyseal line. Diseased tissue found.

November 30th.—Wound healed. No pain. Discharged cured.

June, 1892.—Patient seen and found perfectly well.

Case VIII.—H. B., aged six years. Admitted April 6, 1891. Has had trouble for two years and has been operated upon at a hospital. The leg is flexed upon the thigh. There is some motion, but the leg can not be brought beyond an angle of 30°. Patella not ankylosed. There is a sinus just below and to the inner side of the tubercle of the tibia which leads into a cavity on the head of that bone. There is a scar above the joint.

April 13th.—Ether. The sinus in the bone was enlarged upward so as to gain access to the cavity; it was found to occupy the greater portion of the upper end of the tibia, its upper limit reaching to the epiphyseal cartilage; its walls were sclerosed. No connection with the joint could be made out. The cavity contained inflammatory products and some loose bone. The cavity was about 1¾ × 1½ inches in size. After cleaning it out well, Neuber's operation of implantation of a skin flap was performed. After cutting the tendons behind the joint no improvement in the position of the leg could be made.

October 13th.—The wound healed well except a small sinus, and this would not close. Flap was again raised and the cavity filled with decalcified bone; but after three months, no further improvement taking place in the position of the tibia, the joint was excised. (See Case XXVIII, excision.)

Case IX.—W. W., thirteen years of age. Admitted September 26, 1891. Was in the hospital four years ago with the history of a fall followed by abscesses near hip and knee joints. Dead bone was removed from near the hip joint and just above the knee; both wounds closed.

He returns now with a sinus on the inner aspect of the thigh three inches above the knee. A probe detects exposed bone.

September 26th.—Ether. The sinus was opened and there was an exposed point on the femur, and from this a sinus extending backward and downward into the bone. A probe passed into this sinus, no diseased bone could be found. The bone at the point of operation was sclerosed. From the history it was evident that there was a point of disease not reached. The sinus was enlarged by cutting the bone away freely with a small chisel. When that point was reached a cavity was opened into containing a small piece of dead bone, and from this the sinus extending backward on the posterior aspect of the femur, and hence through the soft parts to the old sinus on the inner aspect of the thigh. The cavity and sinus were thoroughly cleaned out and disinfected.

October 3d.—Patient living in the South, his friends took him home.

The condition of the joint in the cases of excision was as follows: There was disease of the synovial membrane with superficial caries of the bones in four cases; there was general panarthritis in three cases; caseous deposits were found in the bones in two cases; abscess in articular ends of the bone was found in eleven cases; bony ankylosis in three cases. The tibia was dislocated backward in eleven cases. Tubercular synovitis in four cases.

In two cases the joint was excised in order to obtain bony ankylosis in paralysis of the limb.

Result.—Excision has been performed in twenty-eight cases. For deformity, in eight cases; for deformity and disease, in four cases; for disease, in fourteen cases; and to obtain ankylosis, in two cases.

Of these, twenty-two were discharged cured, one was discharged with some bony union, four died, and two cases came to an amputation.

The cause of death was as follows: One from tubercular tumor of the brain, one from general tuberculosis, one from heart failure, and one from spinal disease, joint sound.

I am unable to state the cause of the infection of the bone in Case XII; it must have taken place at the operation.

The two cases of amputation were for persistent and extensive disease of the ends of the bone. After the removal of the limb they made a rapid recovery.

Of the twenty-three patients discharged *cured*—that is, with wound all closed and able to use the limb—their condition was as follows when last heard from: One was well thirteen years, two were well seven years, two five years, two six years, three one year, and two eighteen months after discharge, and three have just left the hospital. One died from diphtheria eight months after leaving the hospital, the limb continuing in good condition. One died from scarlet fever shortly after discharge: wound closed and union firm. One discharged cured as to the limb, but with spinal disease, died five years later from general tuberculosis. Four have never been heard from.

Shortening.—In five cases it was slight; in five, not given; in one it was four inches; in two, two inches; in three, an inch and a half; in two, an inch and a quarter; and in two, three quarters of an inch.

The amount of increase in the shortening was, in cases that have been seen, as follows: In one case, at date of discharge, it was two inches; seven years later, two inches and a half. In one case, at date of discharge, it was an inch and a half; five years later, an inch and three quarters. In one case, at date of discharge, it was an inch and a quarter; two years later, no change. In one case, at date of discharge, it was two inches; thirteen months later, no change. In one case, at date of discharge, it was two inches; seven months later, two inches and a half.

In the case in which there were four inches shortening more than half of it was due to atrophy of the limb and arrest of growth before the date of operation.

The usefulness of the limb after these excisions has been good. There has been some bending in my later cases, but none in the earlier ones. They all are able to walk well, are as active as others of the same age, and there is but little if any limp, provided the shortening is compensated for by the use of a high shoe. I have seen bending in three cases in children under five years of age. I think it due to two causes—first, the fact that the section has been made through cartilage, and, second, too little tissue has been removed. The union in these cases has been quite strong, and the bending has only appeared after several months. On two of these cases I have done an osteotomy and the limb straightened; since then there has up to date been no return of the flexion.

Erasions.—Five cases. One, seven years of age, no shortening, union firm, no bending, two years. One, four years of age, sinus, excised (Case XIX). One, five years of age, cured, no bending, one year. One, five years of age, bending, excision (Case XXII). One, twelve years of age, cured, no bending, one year.

The reason why an excision was performed in two of these cases was that in one considerable bone disease developed; in the other, the union was not firm.

Method of Operating.—The *incision* has varied. In the majority of cases, the old U-shaped one passing below the patella has been used. In a few, a longitudinal one parallel to the long axis of the limb and splitting the patella in its long axis was adopted; in two cases the line of incision has been transverse across the patella, and in one a U-shaped one above the patella. It has not appeared from present experience that one mode of entering the joint has any advantage over another. I have, however, been disappointed somewhat with the longitudinal incision. The joint can be thoroughly exposed through it, but the resulting cicatrix is large and very adherent to the bone, and has not left so satisfactory a condition as either of the others. Again, it is not applicable in cases when there is much disease, or when good drainage is required. So that in all recent cases a return to the old U-shaped incision, below the patella, has been made.

The incision is made in the following manner: Beginning at a point on a level and behind the upper border of one condyle of the femur, it is carried downward, then across the tendo patellæ to a corresponding point upon the opposite side of the articulation; this has been found to give ample room for all purposes. No additional one has ever been made in order to gain access to the subcrural sac.

After turning up the flap, thus formed, all infected tissues have been removed and the subcrural sac dissected out. Section of the bones has been made, if possible, on the joint side of the epiphyseal cartilage. In the earlier cases it was more frequently carried beyond these points, the present method of management of bone abscesses and infected spots not having been adopted; in later cases these have been treated in the manner to be described further on. Section has been made with a saw at right angles to the long axis of the bones, and as thin a slice has been removed as would permit of the leg being brought into a straight line with the long axis of the femur, or would give access to infected points. The amount varies not so much with the extent of disease as with the amount of shortening of the soft parts behind the joint.

In a general way, it may be stated that excision of the knee joint is called for under two conditions: 1. Disease in the articulation. 2. For deformity, either with or without disease. In the former the point of section of the bones is not as arbitrary a one as with the latter class of cases; it is absolutely necessary, in cases of deformity, to remove enough bone from the tibia and femur to allow the leg to be brought into a proper position, no matter what may be the pathological condition of these structures.

The obstacle to the accomplishment of this is not along the contraction of the posterior group of muscles of the thigh, but the thickening and shortening of the connective tissue behind .the joint. This can not be elongated, and it is necessary that there should be no compression of the vessels; and enough bone must be removed to relieve all tension behind the joint, and not simply enough to permit of the cut ends of the bone being forced into coaptation. Hence operations for the correction of deformities are often followed by more shortening than operation for disease.

In cases of disease, enough bone only has been removed to obtain a flat bone surface, unless the trouble in the bones is great.

Treatment of Abscess Cavities.—Formerly it was considered necessary to remove by section all diseased points, and this was done in the earlier cases. Now all abscess cavities, with caseous masses, are thoroughly curetted and disinfected. If a sinus in the bone exists, it is followed to its termination and its walls scraped. If an abscess cavity of any size is opened into, in some cases it has been drained through a separate channel—an opening being made in the shaft. Several times such a cavity has been stuffed with decalcified bone without any special drainage, and the result has been very satisfactory. If any sinuses exist in the soft part they have been dissected out and their edges sutured.

The patella has been generally removed; in a few cases in which it has been left it has given trouble, and a second operation was made necessary.

Suturing of the Ends of the Bone.—Until within the last year the ends of the bones were fastened together either with silver wire or nails. When wire has been used, it has been passed from either condyle of the femur so as to come out well behind on the cut surface of that bone, then into the tibia at a point corresponding to its exit on the cut surface of the femur, and then brought out on the surface of the shaft, an inch or more from the point of section. The two ends were then twisted. In this way the bones were certainly held together, and it made it easier to apply the necessary dressings. But more or less trouble has always followed their use, sometimes a limited necrosis. In other cases, although the bone was not involved, there was more or less suppuration; while again, though they caused no suppuration, the patient complained of their presence, and they had to be removed, for which ether was required.

Nails have some points of advantage over wires. They are more easily inserted, and their removal is readily accomplished without the use of an anæsthetic. But it has been found that suppuration has frequently been set up in their tracks. It has, however, been always confined to the soft part. It is probably due to skin infection, as the nails have been disinfected by heating them in a lamp before their use, and the suppuration would seem to be due to the same cause as stitch abscess. It is almost impossible to thoroughly cleanse the skin in many cases of disease of the knee joint. I have never met with any trouble in the bone from their use.* *In dressing* a joint on which nails have been used, the patient complains of much pain when anything comes against them. It is certainly better to do without either wire or nails. In my earlier cases a plaster-of-Paris splint, extending from the toes to the groin, was used, going over the dressings, fortified with iron straps, and bent to pass around the seat of operation, fenestra being cut out on the following day. Later a posterior splint was used, and over this plaster of Paris. Both of these methods have been found not altogether satisfactory. It is difficult to fit an iron splint perfectly; there is less room for the application of the dressings. Again, a plaster-of-Paris splint soon gets loose, it is liable to get soiled, and its reapplication is often required.

Dressings.—The wound having been thoroughly douched with mercuric solution (1 to 1,000), and all bleeding points of any size ligated, if the cut ends of the bones are placed in position, if nails or wire are used, they are now put in position and the limb placed on a posterior splint, if it is to be put up in this manner. The edges of the incision are united with catgut sutures, except at the posterior limit of the incision; this is left open for the purpose of drainage. Iodoform has been freely used within the wound. Over the line of incision a strip of iodoform gauze is placed, and over this an ample dressing of bichloride gauze, and then a snugly applied bandage, extending from the foot to the groin.

Drainage.—Until within a year rubber drainage-tubes have been used. In my earlier cases the idea was that the greater the number used the more perfect would be the drainage, and the better for the patient. Experience has taught the reverse, and their number has been gradually reduced, until now they are seldom used. It was found that often their point of entrance was the seat of unhealthy-looking granulations, that it sometimes became the source of a limited infection, they seemed to keep up irritation, and their tract was slow in closing. For these reasons of late they have not been used. It has been found that if the parts are properly dressed and the bandage snugly applied, the amount of oozing will be comparatively slight, and can be taken care of by other means. In suturing the wound its most dependent (posterior) point is left open; between the edges of the incision in this position are placed several layers of iodoform gauze, and passing into the posterior part of the joint, and this has been found to act as a sufficient drain.

The present way of dressing the limb is as follows: The Esmarch bandage is removed long enough to permit of the ligation of any bleeding points, and is then reapplied. After suturing the wound and providing for drainage, the bones are held in position by an assistant, and pieces of bichloride gauze are placed around the limb at the seat of operation, and also extending well up and down it, so as to form a thick, fusiform mass. This is tightly and evenly bandaged, beginning at the foot and extending to the groin. Over this three thin splints are tightly secured, one extending from a point as high up as possible to below the foot, the other two laterally, the inequalities left by the dressing being filled with cotton, care being taken that the posterior splint is well padded below, so that there shall be no sagging down of the leg. The Esmarch bandage is then removed. When the patient is returned to bed the limb is slung for twenty-four hours, and then placed flat on the bed. In the last case treated this way the first dressing was not removed for ten days. The advantage of this method seems to be that there is less oozing, less frequent dressings, and much more comfort to the patient. With the posterior iron splint, in my experience, much more frequent dressings were required, and the oozing for the first twenty-four hours was very much greater. After the skin wound is closed the limb is put up in plaster of Paris.

Erasion.—The U-shaped incision has been adopted in all but one case, and then a longitudinal one. All diseased tissue has been removed, the synovial membrane dissected out, and infected points in the bone and cartilage thoroughly curetted. The subcrural sac has also been dissected out and the wound managed in the same manner as in a regular excision.

It is an operation that theoretically commends itself as a substitute for excision, or one that may be justifiable at an earlier date than the latter operation. My experience has been somewhat limited, being confined to only five cases. In example of disease of the synovial membrane alone the removal of the infected tissue would seem to be the most rational, but one is never sure that he has to deal with this condition alone. In many cases there are tubercular deposits in the ends of the bone whose presence can not be known until a section has been removed; and, although the wound may close, the bone disease goes on and the joint again becomes infected. In examples of purely synovial disease there is no difficulty in removing the infected tissues; the wound does well, but the union of the joint surface is of a fibrous nature, and in such cases flexion is so liable to follow that I have been much disappointed in the ultimate result in two cases, notwithstanding the use of a posterior splint for a year.

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* The method of using nails is as follows: Two nails are driven from either condyle of the femur downward and backward, so as to pierce the cut surface of the femur at its middle line, and one from the tibia upward and backward. After these are in position they hold the parts so firmly together that considerable force is required to separate the bones.

There is a class of cases, however, as exemplified in Case V, where there is a limited disease of the bone and where one can reasonably expect to get osseous ankylosis. When it is possible, I think that even in cases of pure synovial disease the cartilage should be well scraped off so as to prevent fibrous ankylosis. It is not an operation applicable to young children.

Disease evidently began in the bone in at least eleven cases, the joint becoming affected only after some length of time. In these cases there was no evidence of profound disease of the synovial membrane; in many the articular cartilage was not destroyed, except at or about a point corresponding to the bone sinus leading from the abscess cavity to the joint. The history of these cases is that the earlier symptoms are those of disease in the end of the bone, the formation of a bone abscess and a late infection of the joint, or in some cases, as in XXVII, the abscess may never gain entrance into the articulation, but the joint may become affected from contiguity of tissues.

It is also to be noted that in the cases forming the basis of this paper these bone abscesses were confined to the upper end of the tibia as a rule, the joint being affected only in one case from a femoral abscess, and that was in Case I of the series of epiphysitis. The symptoms accompanying an articular osteitis (bone abscess) are lameness, pain, atrophy of the muscles of the leg and thigh, flexion of the leg on the thigh, and later swelling of the joint and dislocation of the tibia backward. I have only once met with a case of dislocation of the tibia, except in cases of articular osteitis; the experience of others may be different. With disease of the synovial membrane alone the limb is held only slightly flexed, and I do not recall a single case of marked displacement of the head of the tibia in this affection, except as above noted. In cases of dislocation of the tibia the disease of the articulation itself does not seem to run so destructive a course as in cases where this has not occurred.

In cases where the head of the tibia has become displaced the articular ends of both bones very frequently become altered in shape, the condyles of the femur become elongated and more pointed, while that part of the tibial head on which the condyles rest becomes atrophied. The extent of these secondary changes in the articular surfaces of the bones is well illustrated in Case V in series of erasions, and is the most marked case that has been met.

In only three cases has bony ankylosis been found. In three the patella was ankylosed to the femur. This condition is an obstacle to a useful limb, walking without a crutch or splint is not possible, and the limb is in a worse condition than one ankylosed at an angle.

In two cases there was caries of the patella, and in one of these there existed a cavity containing a sequestrum which seemed to be the point from which the joint became infected.

The ten cases of epiphysitis of the femur and tibia are included because the relation between this affection and a certain class of joint affections is very close. When an abscess forms in the end of a bone it must follow one of three courses—either open external to the joint, into the joint, or become a source of irritation; the end of the bone, becoming enlarged, is always the seat of more or less pain, the amount of new bone making it impossible for the abscess cavity to make its way to the surface. If it makes its way into the joint, the articulation becomes affected; or even if the contents of the bone abscess do not enter the joint, the articulation may become affected, as in Case XXVIII, the tibia dislocated, and secondary changes take place in the shape of the articular surfaces of the bones.

The disease began as an epiphysitis in Cases I, II, III, IV, V, VIII, XI, XIII, XXI, XXV, XXVIII, and Case V of erasion, and the joint was not involved until late, when the abscess opened into the articulation. In the series of cases of epiphysitis, in Case I the abscess had opened into the articulation, but the latter had escaped with but little disease.

In Case XXVIII, although there was no connection between the bone abscess in the head of the tibia and the knee, yet the tibia had become dislocated backward, the femoral condyles deformed, so that a restitution of the leg to its normal position was an impossibility without an operation. In five of the cases of epiphysitis the abscess in the head of the tibia followed immediately upon an injury, while in two an abscess had not formed, yet diseased bone was removed and a recovery followed. Perhaps the five cases of acute abscess belong to a different class of cases than those of tubercular osteitis referred to in the list of excisions. Yet, although the joint in all but one case escaped serious trouble, it was only accidental, the contents of the abscess finding an easier way to the surface away rather than toward the joint. Looking at these series of cases from another point of view—that is, putting all examples of abscess in the ends of the bone together, without any regard whether the joint becomes diseased or not—it is found that Cases I, II, V, VIII, XI, XIII, XXI, XXV, XXVIII of excisions; Case V, erasions; and Cases I, II, III, IV, V, VI, VIII, XI of epiphysitis—eighteen cases—abscess was found in the articular ends of the bone; in eight of these pus entered the joint; in one, although the abscess did not open into the articulation, yet the tibia became displaced and the articular ends of the bones deformed, so that an operation was necessary to straighten the limb.

The escape of the joint from infection in Cases II, III, IV, V, VI, VII, IX of epiphysitis may be said to have been accidental, the pus finding an easier route to the surface than toward the joint. From the appearance of the bone in the cases in which an excision was performed, it was evident that if the upper end of the tibia had been trephined before the pus had found a way into the joint, the abscess cavity could easily have been reached and the articulation escaped, and these cases would have been classed with those of epiphysitis. Another fact that does not appear in the abstract of cases is that, in the cases of bone abscess in Class I, in which the abscess was beyond the epiphyseal cartilage, the tract from the collection of pus to the joint cavity was long and of small size; and the only difference between them and those of Class III was that in the one case the abscess was deep-seated, while in the other it was superficial.

In three cases one condyle of the femur was trephined, diseased tissue removed, and a cure followed, the joint escaping. The history of these cases was such that no difficulty was found in locating the point of disease. The symptoms were localized pain on pressure, lameness, and an ill-defined swelling. In these cases the disease was confined to the cancellous tissue and was localized. Disease of the knee joint beginning in the bone is a local, not a general infection. In the cases forming the basis of this paper, in none in which abscess of the bone was present, was there infection of the osseous tissue beyond the abscess cavity or the sinus leading to the knee joint. In other words, tubercular abscess of the bone was surrounded by a wall of sclerosed bone, and the tissue beyond the zone was not infected.

In one or two cases there was a general infiltration of the end of the bone or bones, but in these cases the disease started as a tubercular synovitis and the bone was infected from the joint cavity. In such cases the whole articular surface of the bone may be soft and filled with inflammatory products. This condition has been seen in young children. I do not remember to have met with it in those over six or seven years of age.

In three cases of epiphysitis the end of the bone was trephined comparatively early in the course of the affection, a diseased point opened, curetted, and the patient discharged cured, the joint not becoming diseased. I believe that if a similar operation had been done in the cases in which an excision was performed, and in which the joint was infected from a circumscribed abscess in the end of the tibia before this accident had happened, a cure would have been effected and the joint escaped.

In a case giving the history of lameness, pain, more or less acute, about the articular ends of either the femur or tibia, accompanied by atrophy of the muscles of the limb and without any swelling of the knee joint, we have the symptoms of epiphysitis; if in addition to this a tender point can be made out, or if pain is complained of in either bone end, I think the operation of trephining over that point is not only justifiable, but demanded in the best interest of our patient. If diseased bone is not at first found, no injury to the part can possibly result by a further search with a sharp instrument. Even if no abscess is found, the operation is of no greater danger than an exploratory incision in the soft parts; and further, if the abscess is not found, it may at a future date find an easier way out by the opening made by the trephine than into the joint.

In a few cases of tubercular disease of the synovial membrane, when the disease has been of long standing and progressive, the ends of the bone have been found infiltrated with tubercular matter and inflammatory products without any limiting osteitis, the bone was soft and had a worm-eaten appearance. It resembled the bone in cases of tubercular disease of the hip in which the head and neck had become infiltrated with tubercle. They belong to a different class of cases than those of epiphysitis.

The management of the cavity left by the removal of the pus in the end of the bone is not as simple as it would at first seem. We often have a large cavity, sometimes extending upward toward the joint, with sclerosed and overhanging walls. Left to itself, it will not fill in, but a sinus of greater or less size, connecting with the cavity in the bone, will persist and discharge for years, the surrounding bone becoming more and more condensed. Three methods have been adopted for the obliteration of such a cavity: filling in by means of a blood-clot, the implantation of decalcified bone, and Neuber's operation of implantation of a skin flap. With the first I have had no experience. Filling the cavity with decalcified bone has been successful in one case, but better results have been obtained by the adoption of Neuber's operation.

Cases of tubercular disease of the synovial membrane, in which the swelling comes on insidiously without much pain or tenderness on pressure, and where the skin is white and infiltrated, are cases for early amputation rather than excision. Cases VI and X belong to this class, and I think an error was made in excising; amputation should have been performed early.

DESCRIPTION OF A PORTABLE CASE FOR CLINICAL EXAMINATION OF URINE.

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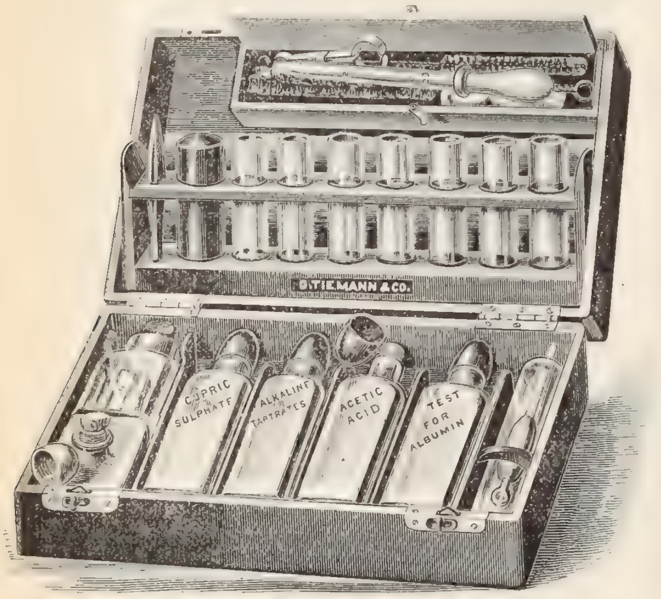
A simple portable case of apparatus for clinical examination of urine is certainly a great convenience; and the importance of facilities for prompt and accurate examinations in certain emergencies is sufficiently evident. Especially in consulting practice is it often felt to be essential to ascertain at once certain simple facts in regard to the urine, without the delay which is so frequently inevitable. To meet a want that I have long felt, I have devised a portable case, which will enable one to determine the reaction, specific gravity, and presence or absence of albumin or sugar, with as little expenditure of time and trouble as would be necessary for an ordinary examination of the chest. I have thought that while the required apparatus should occupy the smallest space possible, it should be sufficiently complete and convenient to admit of an examination accurate and full enough for ordinary clinical purposes. It is impracticable, however, to determine at the bedside the proportion of albumin or of sugar, or to settle the often delicate question of the presence and character of casts.

The wood-cut represents the apparatus with the case open. The box is of hard rubber, and when closed it meas-



ures six and three quarters by four inches and is two inches deep. It can, therefore, be readily carried in the pocket or in a physician's bag. All parts of the apparatus are of rubber or glass, except the hinges, catches, test-tube holder, and the alcohol lamp, which are nickel-plated. The cut gives a clear idea of its appearance. The reagents are Roberts's test for albumin, acetic acid, Squibb's two liquids used in testing for glucose, and blue and red litmus paper. The liquids are in glass bottles with paraffined cork stoppers, and fitted with hard-rubber caps. A rack turns up to a vertical position when the case is open, and carries seven short test-tubes, a rubber forceps, with a rubber match-box in a place that is to be used in taking the specific gravity. The urinometer, in its paper case and glass for holding the urine, with the alcohol lamp, are in the bottom section. The case also contains a clamp for holding a test-tube when the urine is boiled. In the top section is a compartment for a pipette graduated in tenths of a cubic centimetre, a large brush for cleaning the test-tubes, a drier for the test-tubes, and a small brush for cleaning the pipette when necessary. In the top of the case are the following directions for use printed on a card:

Test for Albumin.—Fill a test-tube to the depth of about half an inch with the test-liquid (five parts of a saturated solution of magnesium sulphate and one part of pure nitric acid). Carefully introduce, with the pipette, about an equal bulk of urine, so that the urine will float on the test-liquid. If albumin is present, a white zone will appear between the two liquids. If the white zone should appear, coutrol the test in the following way: Fill a test-tube nearly full of urine; add one or two drops of acetic acid (five per cent. solution of chemically pure acid); boil the top of the urine. If albumin is present, the top of the urine will become cloudy (Roberts).

Tests for Sugar.—Introduce into a test-tube, with the pipette, 0·5 c. c. of the solution of cupric sulphate (31·5 grains of pure cupric sulphate in an ounce of distilled water with one drop of sulphuric acid); then 0·5 c. c. of water; then 0·5 c. c. of the solution of alkaline tartrates (160 grains of Rochelle salt and 44 grains of caustic soda in an ounce of distilled water); finally, 0·5 c. c. of water, and shake the mixture without applying the finger to the mouth of the test-tube. Boil the mixture and allow it to cool slightly; then add 0·5 c. c. of urine, boil and allow the mixture to cool. If sugar is present, there will be a reddish or yellowish precipitate. If no sugar is present, the mixture will remain clear, and there will be no marked change in color (Fehling's test, modified by Squibb).

The apparatus is made by Messrs. George Tiemann & Co., 107 Park Row, New York city, and is filled by Dr. Edward R. Squibb, Brooklyn, N. Y., who supplies the urinometer, carefully tested, thus securing perfectly reliable reagents. Practically, I have found the case, even when used under disadvantages, nearly as convenient for the purposes to which it is applicable as a larger form of apparatus. When running water is not at hand, the test-tubes, urinometer, etc., may be thrown into a basin of water, cleaned, dried, and put in place ready for use; and the time occupied in making an examination and cleaning need not be more than ten or fifteen minutes.

The fault in most forms of apparatus for examinations of urine at the bedside is that they are diminutive, inconvenient and not sufficiently accurate. I think the case I have described has the merits of accuracy and convenience; and certainly, if this is so, its use will prevent the omission of many examinations of urine the results of which may be of great immediate importance. Few things are more useful to the busy practitioner than rapid and easy methods of physical examination.

THE
OPHTHALMOMETER OF JAVAL AND SCHIÖTZ
AND THE DIAGNOSIS OF ASTIGMATISM.

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The collection of the data which are presented in this paper was begun in October, 1891, about one year after I had procured an ophthalmometer and had become familiar with the working of it. My instrument is No. 160, model of 1889, and was manufactured by A. Goubeaux at Paris. So far as I am able to judge, it is as perfect and reliable as any instrument of its kind. For practical use it is placed upon a movable table before a north window, which extends to the ceiling of my office and which is unobstructed by adjacent buildings. The lower part of the window is provided with an opaque curtain, which may be raised or lowered at the will of the observer. The illumination is, therefore, excellent. The method of manipulating the ophthalmometer was that suggested by Dr. Motais,* and whenever, for one reason or another, the reading was not satisfactory, the manœuvres were repeated until a correct result was obtained. My own error of refraction was annulled by properly adjusted spectacles, which had been fitted to me by an eminent oculist while the accommodation was paralyzed by atropine. Repeated attempts to detect some error in these glasses have always failed. The conditions, then, in the observing eye may be regarded as satisfactory.

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* *Mémoires d'ophthalmométrie*, Paris, 1890, pp. 25 *et seq.*

The cases reported are not all that I have examined with the ophthalmometer, or in which I have used atropine to facilitate the diagnosis of errors of refraction since last October. Neither are they selected cases. They are simply those cases which have come under my observation on days when pressure of work was not too great to afford me sufficient time for taking more than ordinary pains with these examinations.

Long before this investigation was undertaken I had become convinced that the readings of the ophthalmometer in my hands could not be relied upon to indicate the number of the correcting lens. This had been the experience of others more familiar with the instrument than I. The object in view in all attempts to relieve symptoms by glasses being to increase the acuteness of vision, or to relieve the ciliary muscle of a harmful burden without diminishing the sharpness of sight, the fact that the lenses suggested by the ophthalmometer very frequently diminished the patient's acuteness of vision was early noted in the trials. For one reason or another, therefore, the ophthalmometric findings could not, without a knowledge of the variation incident to the instrument, be regarded as a safe guide to the diagnosis of astigmatism. If the error in the ophthalmometric readings were a constant quantity, the instrument would become almost indispensable to ophthalmologists. If the variation were irregular and at times excessive, the value of the ophthalmometer as a diagnostic agent would proportionately depreciate. In order to determine the variation incident to my instrument in my hands, I began the study of the cases herein reported.

Now, when all the conditions necessary to perfect ophthalmometry are fulfilled—in other words, when the patient is in correct position and his eyes are steady, when the light is the best possible, when the observer's eyes are steady and their refractive error perfectly corrected, when the lenses of the instrument are perfectly clean and the cross-hairs exactly at the focus of the ocular—it is still a delicate matter to positively assure one's self that the corneal images of the reflectors are exactly in apposition and that the dark transverse line of one reflector joins the dark transverse line of the other to make one continuous straight line. I would not deny that it is possible to make a correct observation in the first position. I do mean to suggest that an error as great as 0·25 D., one way or the other, may be and is, no doubt, commonly made in the initial adjustment of the ophthalmometer. From this it follows that in the reading of fractions of a dioptre errors are commonly made. In the appended reports I wish to be understood. I do not pretend to accurately bisect the image of one half of one step of the reflector; and when the reading is, for example, 0·25 or 0·75, I wish to convey the idea that the overlapping of the reflectors was, as nearly as I could estimate, one quarter or three quarters of the step.

In practice, an error of 0·25 D. in a cylindrical glass is important. Undoubtedly there are astigmatic people to whom it makes very little difference whether their glasses are accurately fitted or not. But there is another class of patients to whom life is almost a burden if their cylindrical lenses are not adjusted to a quarter of a dioptre. The relief afforded by such weak cylinders is sometimes almost incredible; but the instances of it are so numerous as no longer to require reiteration. Whatever the explanation may be, the fact still remains. And so long as a one-quarter D. glass has a beneficent influence upon asthenopia and headache, by all means should the refractive error be measured as closely as that, whether hypnotism, mesmerism, or any other ism or faith cure is, or is not, the basis of the relief afforded thereby.

The axis of the astigmatism is determined by the position of the transverse dark lines of the reflectors; and in both the first and the second positions those lines should meet to form a continuous straight line. That it is not an easy matter in some cases to determine when they form a continuous straight line, every one who has had any experience with the instrument can testify. Hence an error of five or more degrees may not infrequently be made in this regard. An error of five degrees may not be very important, still it is sufficient to introduce an element of uncertainty into the investigation.

The cases reported are subdivided into three classes: Table A, cases in which atropine was used; Table B, cases of cataract extraction (with an iridectomy); Table C, cases in which atropine was not used. In each instance the greatest possible caution was observed to eliminate every error from the conditions and the results of the observation, both in the ophthalmometric examination and in that by the trial lenses, test letters, and dial. The data given are, therefore, the best obtainable in these patients.

In each instance the number of instillations of atropine drops is stated. The practice was to order a four-grain solution of sulphate of atropine, one drop of which to be instilled into each eye, night and morning, sometimes at noon also. The state of the accommodation was determined by the patient's ability to read common print and by the facility with which the subjective examination was conducted. Whenever any suspicion arose respecting the thoroughness of the action of the mydriatic, more of the drug was ordered. It may be objected that this is a crude method of measuring the effect of atropine. Nevertheless, it is the method commonly practiced, and therefore it suits the purposes of this inquiry. Of course an ophthalmoscopic examination was made in each case. No record of the results is given, because I do not pretend to measure refraction to less than 0·50 D. with the ophthalmoscope.

The grand total of eighty-eight comparative examinations may be regarded as quite sufficient for the basis of a generalization. And the one which comes most forcibly to my thought is that, in my hands at least, the variation incident to the ophthalmometer in the diagnosis of astigmatism is not a constant quantity. *Indeed, it would be very surprising if this were not so.* The reasons for this may now be given:

1. The anterior surface of the cornea is not spherical; it is ellipsoidal; hence the measurement of its curva-

Table A.—*Cases in which Atropine was used.*

No.	Name.	Vision.	REFRACTION.		Difference.
			Javal's ophthalmometer.	Trial lenses.	
1	Miss N. O. Wallace, June 6, 1891; before atropine.	R. 6/5—. L. 6/10.	....	R. c. + 0·25, ax. 75°, V. = 6/6. L. c. + 0·25, ax. 110°, V. = 6/10. Advised atropine; did not prescribe lenses.	
	Nov. 28, 1891, atropine 4 times; A. M.	R. 5/60. L. 5/60.	R. ± 1, ax. 165° or 75°. L. ± 0·75, ax. 5°, 10°, 100°, or 105°.	R. s. + 4·50, V. = 6/6. L. s. + 4·50, V. = 6/6. Patient persistently rejected cylindrical lenses.	R. 1·00. L. 0·75.
	P. M.		R. ± 0·50, ax. 150° or 60°. L. ± 0·50, ax. 25° or 100°.	*Ditto.* *Ditto.*	R. 0·50. L. 0·50.
2	Mrs. B. W. Wilcox, July 17, 1891; before atropine.	R. 6/10. L. 6/10.	....	R. c. + 0·25, ax. 90°, V. = 6/5. L. c. + 0·25, ax. 90°, V. = 6/6.	
	Nov. 30, 1891, atropine 4 times.	R. 6/20—. L. 6/30.	R. ± 0·50, ax. 180°. L. ± 0·50, ax. 180° or 95°.	R. s. + 1·50, V. = 6/6—. L. s. + 1·50, V. = 6/6—.	R. 0·50. L. 0·50. This patient rejected cylindrical lenses.
3	Mr. R. C. Mills, Dec. 2, 1891; before atropine.	R. 6/5. L. 6/5.	R. ± 0·50, ax. 180°. L. ± 0·50, ax. 180°.	R. c. + 0·50, ax. 90°, V. = 6/6. L. c. + 0·50, ax. 90°, V. = 6/6.	R. 0. L. 0.
	Dec. 3, 1891, atropine 3 times.	R. 6/15. L. 6/15.	R. ± 0·50 > 1, ax. 180°. L. ± 0·50 > 1, ax. 180°.	R. s. + 0·75 ⊃ c. + 0·50, ax. 90°, V. = 6/6. L. s. + 1·00 ⊃ c. + 0·50, ax. 90°, V. = 6/6.	R. 0·25. L. 0·25.
4	Mr. H. S. Drew, Dec. 2, 1891; before atropine.	R. 6/6—. L. 6/6—.			
	Dec. 5, 1891, atropine 6 times.	R. 6/15. L. 6/30.	R. ± 1·00, ax. 180°. L. ± 1·00, ax. 180°.	R. s. + 0·50 ⊃ c. + 0·75, ax. 90°, V. = 6/6. L. s. + 0·50 ⊃ c. + 0·75, ax. 90°, V. = 6/6.	R. 0·25. L. 0·25.
5	Miss G. L. Griswold, Dec. 10, 1891; before atropine.	R. 6/6. L. 6/5.	R. ± 0·75, ax. 180°. L. ± 0·75, ax. 180°.		
	Dec. 11, 1891, atropine twice.	R. 6/16. L. 6/10.	R. ± 0·75, ax. 180°. L. ± 0·50, ax. 180°.	R. s. + 0·50 ⊃ c. + 0·50, ax. 90°, V. = 6/5—. L. s. + 0·25 ⊃ c. + 0·50, ax. 90°, V. = 6/5—.	R. 0·25. L. 0.
6	Miss M. E. Hathorn, Oct. 30, 1891; after atropine.	R. 6/30.	....	R. s. + 0·75 ⊃ c. + 0·50, ax. 90°, V. = 6/6.	Compared with observation on Dec. 15, 1891: R. 0.
		L. 6/20.	....	L. s. + 1·25 ⊃ c. + 0·25, ax. 90°, V. = 6/6.	Axes do not correspond.
	P. M.	R. 6/20. L. 6/20.	....	R. s. + 0·75 ⊃ c. + 0·50, ax. 90°, V. = 6/6. L. s. + 1·00 ⊃ c. + 0·25, ax. 90°, V. = 6/6.	L. —0·25.
	Dec. 15, 1891; without atropine.	R. 6/5—.	First observation: R. ± 0·50, ax. 160°.	R. s. + 0·25 ⊃ c. + 0·25, ax. 90°, V. = 6/6.	R. 0·25; R. 0·50.
		L. 6/5—.	(Second observation: R. ± 0·75, ax. 1·50°.) L., no astigmatism.	L. c. + 0·50, ax. 90, V. = 6/6.	L. —0·50. Axes do not correspond.
7	Nellie Prindle, 10 yrs. old; Dec. 22, 1891; atropine 3 times.	R. 6/30. L. 6/30.	....	R. s. + 1·00 ⊃ c. + 1·50, ax. 60°, V. = 6/10—. L. s. + 1·00 ⊃ c. + 1·50, ax. 90°, V. = 6/10—.	
	Dec. 23d, atropine 5 times.	....	R. ± 2, ax. 165°, 170°, 80°, or 82°.	R. s. + 2·50 ⊃ c. + 1, ax. 90°, V. = 6/6—.	R. 1·00.
			L. ± 2, ax. 180° or 90°.	L. s. + 2·50 ⊃ c. + 1, ax. 90°, V. = 6/6—.	Axes do not correspond; L. 1·00.
8	Mr. E. S. Hawes, July 19, 1890; before atropine.	R. 6/5. L. 6/5.	....	R. c. + 0·50, ax. 90°, V. = 6/5. L. c. + 0·50, ax. 90°, V. = 6/5.	
	July 21, 1890; after atropine.	R. 6/15. L. 6/15.	....	R. s. + 0·50 ⊃ c. + 0·50, ax. 90°, V. = 6/5. L. s. + 0·50 ⊃ c. + 0·50, ax. 90°, V. = 6/5.	
	Dec. 28, 1891; without atropine.	....	R. ± 0·75, ax. 175° or 5°. L. ± 0·75, ax. 175° or 5°.	....	R. 0·25. L. 0·25. R. and L. axes do not correspond.
9	Mr. M. S. Allen, Sept. 22, 1891; before atropine.	R. 6/10. L. 6/10.	....	R. c. + 0·50, ax. 90°, V. = 6/6—. L. c. + 0·50, ax. 90°, V. = 6/6—.	
	Dec. 28, 1891	....	R. ± 0·75, ax. 180°. L. ± 0·75, ax. 180°.		
	After atropine 3 times, Dec. 29, 1891.	....	R. ± 0·75, ax. 180°. L. ± 0·75, ax. 180°.	R. s. + 0·75 ⊃ c. + 0·75, ax. 90°, V. = 6/5. L. s. + 0·75 ⊃ c. + 0·75, ax. 90°, V. = 6/5.	R. 0. L. 0.
10	Miss C. L. Bicknell; before atropine, Dec. 31, 1891.	R. 6/6. L. 6/6.	R. ± 0·75, ax. 180°. L. ± 0·75, ax. 180°.		
	Jan. 1, 1892; atropine 3 times.	R. 6/10. L. 6/10.	R. ± 0·75, ax. 180°. L. ± 0·75, ax. 180°.	R. s. + 0·25 ⊃ c. + 0·25, ax. 90°, V. = 6/5—. L. c. + 0·25, ax. 90°, V. = 6/5—.	R. 0·50. L. 0·50.
11	Mr. C. A Brown; before atropine, Jan. 4, 1892.	R. 6/5. L. 6/5.	R. ± 0·50, ax. 180°. L., no astigmatism.	R. c. + 0·25, ax. 90°, V. = 6/5. L. c. + 0·25, ax. 90°, V. = 6/5.	R. 0·25. L. —0·25.
	After atropine, Jan. 5, 1892.	R. 6/10.	R. ± 0·75, ax. 170° or 85°.	R. s. + 0·75 ⊃ c. + 0·25, ax. 90°, V. = 6/5.	R. 0·50. R. axes do not correspond.
		L. 6/15.	L. ± 0·75, ax. 180° or 90°. *Exam. by Dr. L. W. Flanders:* R. ± 0·75, ax. 165° or 75°. L. ± 0·75, ax. 170° or 85°.	L. s. + 0·75 ⊃ c. + 0·25, ax. 90°, V. = 6/5.	L. 0·50.
12	Mr. H. H. Seeley; after atropine twice, Jan. 6, 1892; A. M.	R. 6/10. L. 6/30.	R. ± 1·50, ax. 180°. L. ± 1·50, ax. 180°.	R. s. + 1 ⊃ c. + 1, ax. 90°, V. = 6/6+. L. s. + 1 ⊃ c. + 1, ax. 90°, V. = 6/6+.	R. 0·50. L. 0·50.
	P. M.; atropine 3 times	R. 6/15+. L. 6/30.	R. ± 1·50, ax. 180°. L. ± 1·50, ax. 180°.	R. s. + 0·75 ⊃ c. + 1, ax. 90°, V. = 6/5. L. s. + 0·75 ⊃ c. + 1, ax. 90°, V. = 6/5.	R. 0·50. L. 0·50.

TABLE A (*Continued*).

No.	Name.	Vision.	Refraction. Javal's ophthalmometer.	Refraction. Trial lenses.	Difference.
13	Miss M. H. Bosworth; before atropine, Feb. 3, 1892.	R. $^{6}/_{6}$. L. $^{6}/_{6}$.	R. ± 1, ax. 180°. L. ± 1, ax. 180°. First observation, R. E. axis 165° or 75°; the axis immediately changed to 180° or 90°.	R. s. + 0·75, V. = $^{6}/_{5}$. L. s. + 0·75, V. = $^{6}/_{5}$.	R. 1·00. L. 1·00.
	Feb. 4, 1892, atropine twice.	R. $^{6}/_{60}$. L. $^{6}/_{60}$.	R. ± 1, ax. 160° or 90°. L. ± 1, ax. 180°.	R. s. + 2·75 ⊃ c. + 0·50, ax. 90°, V. = $^{6}/_{5}$—. L. s. + 2·25 ⊃ c. + 0·50, ax. 90°, V. = $^{6}/_{5}$—.	R. 0·50. L. 0·50.
14	Master Arnold, aged 9 yrs.; Feb. 12, 1892, atropine 6 times.	R. $^{6}/_{12}$—. L. $^{6}/_{12}$+.	R. ± 1, ax. 165° or 90°. L. ± 1, ax. 165° or 90°.	R. s. + 0·50 ⊃ c. + 0·50, ax. 90°, V. = $^{6}/_{6}$. L. s. + 0·50 ⊃ c. + 0·50, ax. 90°, V. = $^{6}/_{6}$.	R. 0·50. L. 0·50.
15	Mrs. F. E. Copeland; before atropine, Feb. 29, 1892.	R. $^{6}/_{6}$. L. $^{6}/_{6}$.	R. ± 1, ax. 165°. L. ± 1·50, ax. 180°.	R. c. + 0·50, ax. 90°, V. = $^{6}/_{6}$—. L. c. + 0·50, ax. 90°, V. = $^{6}/_{6}$—.	R. 0·50. L. 0·50.
	March 1, 1892, atropine 3 times.	R. $^{6}/_{30}$. L. $^{6}/_{30}$.	R. ± 1·50, ax. 165° or 90°. L. ± 1, ax. 180° or 90°.	R. s. + 1 ⊃ c. + 0·75, ax. 90°, V. = $^{6}/_{6}$—. L. s. + 1·50 ⊃ c. + 0·50, ax. 90°, V. = $^{6}/_{6}$—.	R. 0·50. L. 0·50.
16	Miss C. A. Skinner, March 7, 1892; before atropine.	R. $^{6}/_{6}$—. L. $^{6}/_{6}$—.	R. ± 0·50, ax. 180°. L. ± 0·50, ax. 180°.		
	March 9th, atropine twice.	R. $^{6}/_{60}$. L. $^{6}/_{60}$.	R. ± 0·50, ax. 170° or 90°. L. ± 0·50, ax. 180°.	R. s. + 2 ⊃ c. — 0·25, ax. 180°, V. = $^{6}/_{6}$. L. s. + 2 ⊃ c. — 0·25, ax. 180°, V. = $^{6}/_{6}$.	R. 0·25. L. 0·25.
17	Miss M. Hodges, March 12, 1892; before atropine.	R. $^{6}/_{6}$. L. $^{6}/_{6}$.	....	R. c. + 0·50, ax. 90°, V. = $^{6}/_{6}$. L. c. + 0·50, ax. 90°, V. = $^{6}/_{6}$.	
	March 14, 1892, atropine twice.	R. $^{6}/_{12}$+. L. $^{6}/_{12}$—.	R. ± 1, ax. 160° or 90°. L. ± 1·25, ax. 180° or 90°.	R. c. + 0·75, ax. 90°, V. = $^{6}/_{6}$. L. c. + 0·75, ax. 90°, V. = $^{6}/_{6}$.	R. 0·25. L. 0·50.
18	Miss E. D. Smith, March 16, 1892; atropine twice.	R. $^{6}/_{30}$. L. $^{6}/_{30}$.	R. ± 0·50, ax. 165°. L. ± 0·50, ax. 180°.	R. s. + 0·50 ⊃ c. + 0·50, ax. 90°, V. = $^{6}/_{6}$. L. s. + 0·50 ⊃ c. + 0·50, ax. 90°, V. = $^{6}/_{6}$.	R. 0. Axes do not correspond. L. 0.
19	Miss A. Hall, March 18, 1892; atropine 3 times.	R. $\overset{21}{\underset{50}{-2}}$. L. $^{3}/_{50}$.	R. ± 0·50, ax. 170° or 100°. L. ± 0·50, ax. 165° or 105°.	R. s. + 3·50 ⊃ c. + 0·25, ax. 100°, V. = $^{6}/_{9}$+. L. s. + 4 ⊃ c. + 0·25, ax. 90°, V. = $^{6}/_{9}$+.	R. 0·25. L. 0·25. Axes do not correspond.
20	Ada Tower, aged 11 yrs.; before atropine, Jan. 7, 1892.	R. $^{6}/_{15}$. L. $^{6}/_{30}$.	R. ± 0·75, ax. 180°. L. ± 0·75, ax. 165°.	R. s. — 0·75, V. = $^{6}/_{6}$. L. s. — 1·50 ⊃ c. — 0·25, ax. 90°, V. = $^{6}/_{6}$.	R. 0·75. L. 0·50. Axes do not correspond.
	Jan. 8th, atropine 3 times.	R. $^{6}/_{12}$. L. $^{6}/_{30}$.	R. ± 1·25, ax. 180° or 90°. L. ± 1, ax. 165° or 75°.	R. c. — 0·50, ax. 180°, V. = $^{6}/_{5}$—. L. c. — 0·50, ax. 180° ⊃ s. — 1, V. = $^{6}/_{5}$—.	R. 0·75. L. 0·50. Axes do not correspond.
21	Mrs. J. C. Levengood; before atropine, Feb. 18, 1892.	R. $^{6}/_{20}$. L. $^{6}/_{20}$+.	R. ± 1, ax. 180°. L. ± 1, ax. 180°.		
	Feb. 19th, atropine twice.	R. $^{6}/_{15}$—. L. $^{6}/_{12}$+.	R. ± 1, ax. 180° or 105°. L. ± 1, ax. 165°.	R. s. — 0·50 ⊃ c. — 0·75, ax. 180°, V. = $^{6}/_{6}$—. L. s. — 0·25 ⊃ c. — 1, ax. 180°, V. = $^{6}/_{6}$—.	R. 0·25. L. 0. Axes do not correspond.
	Feb. 20th, atropine 5 times.	R. $^{6}/_{20}$. L. $^{6}/_{15}$.	....	R. s. — 0·50 ⊃ c. — 1, ax. 180°, V. = $^{6}/_{6}$. L. s. — 0·25 ⊃ c. — 1, ax. 180°, V. = $^{6}/_{6}$.	R. 0. L. 0. Some variation in axes.
22	Lucy Brown, aged 12 yrs.; atropine.	R. $^{4}/_{60}$. L. $^{4}/_{60}$.	R. ± 4·50, ax. 180°. L. ± 5·00, ax. 180°.	R. c. + 4, ax. 90 ⊃ s. — 1·50, V. = $^{6}/_{15}$. L. c. + 5, ax. 90 ⊃ s. — 1·50, V. = $^{6}/_{15}$.	R. 0·50. L. 0.

Summary.—Total cases, 22; total number of eyes, 44; total number of comparative examinations, 63.

Ophthalmometer and trial lenses agreed	....	12, or 19%
Ophthalmometer greater than trial lenses by	0·25 D...	15
" less " "	0·25 D...	2
" greater " "	0·50 D...	25, or 39%
" less " "	0·50 D...	1
" greater " "	0·75 D...	3, or ·04%
" " " "	1·00 D...	5, or ·08%
		63

If we assume that the difference of 0·25 D. was due to imperfect contact of the reflectors in the first position, we have 12 + 15 + 2, or 29 examples of agreement between the two methods of diagnosis, or 46 per cent. of the total number.

Respecting the axis of the astigmatism, the ophthalmometer and the trial lenses did not correspond in 11 examinations, or 17 per cent. To obtain this result I have excluded—

Case 1, because trial lenses showed no astigmatism.
" 2, " " " "
" 6, left eye, because ophthalmometer showed no astigmatism.
" 11, " " " " " before atropine.
" 13, " " trial lenses " " " "

Note in Case 13 the change in axis which occurred during the examination.

By the ophthalmometer the principal meridians were not at right angles to each other in Cases 1, L.; 2, L.; 7, R.; 8, R. and L.; 11, R. and L.; 13, R.; 14, R. and L.; 15, R. and L.; 16, R.; 17, R.; 19, R. and L.; 20, R.; 21, R.

ture by the Javal-Schiötz instrument is only approximately correct.

2. The ophthalmometer does not deal with that portion of the cornea through which the visual line passes, but with an annular segment about 1 mm. distant from the visual line. It must be assumed that the curvature at the visual line is the same as that of the surface measured. This may or may not be the case. Hence, another source of error in ophthalmometry.

3. The ophthalmometer does not inform us respecting the posterior surface of the cornea. If the posterior surface of the cornea be not parallel to the anterior surface, that condition will influence the refraction of light. There is no reason to suppose that the surfaces of the cornea are strictly parallel to each other. And hence another source of error in ophthalmometry.

4. The ophthalmometer does not measure lenticular astigmatism, and this may be an important error.

TABLE B.—*Cases of Cataract Extraction.*

No.	Name.	Vision.	REFRACTION.		Difference.
			Javal's ophthalmometer.	Trial lenses.	
1	Mr. W. Felch; operation with iridectomy, October, 1891.	....	L. ± 5, ax. 180°; against rule.	L. s. + 10 ⊃ c. + 3, ax. 180°, V. = $^{6}/_{15}$.	L. 2·00.
	Examination of refraction, Dec. 1, 1891; 59 yrs.	....		Reads Jaeger No. 1 with s. + 17 ⊃ c. + 3, ax. 180°.	Media perfectly clear.
2	Miss Steinhour; operation with iridectomy, October, 1891.	....	L. ± 3, ax. 10°; against rule.	L. s. + 13 ⊃ c. + 1, ax. 10°, V. = $^{6}/_{9}$.	L. 2·00.
	Examination of refraction, Feb. 3, 1892; 64 yrs.	....	....	Reads Jaeger No. 1 with s. + 16 ⊃ c. + 1, ax. 10.	Media perfectly clear.

Comment.—These cases are reported because the media were perfectly clear. In both the ophthalmometer indicated 2 D. more astigmatism than the trial lenses did. In both the vision by the subjective correction was much superior to that obtained when the cylinder indicated by the ophthalmometer was tried. Both patients read Jaeger No. 1 rapidly with the glasses indicated above. According to my experience, the ophthalmometer always exaggerates the astigmatism in cases of cataract extraction by one or more dioptres.

TABLE C.—*Cases in which Atropine was not used.*

No.	Name.	Vision.	REFRACTION.		Difference.
			Javal's ophthalmometer.	Trial lenses.	
1	Mr. C. R. Palmer, Jan. 3, 1892.	R. $^{6}/_{30}$.	R. ± 1, ax. 180°.	R. s. − 2 ⊃ c. − 0·75, ax. 90°, V. = $^{6}/_{6}$.	R. 0·25.
		L. $^{6}/_{30}$.	L. ± 1, ax. 180. Both against rule.	L. s. − 2 ⊃ c. − 0·75, ax. 90°, V. = $^{6}/_{6}$.	L. 0·25.
2	Mr. F. A. Brown, Jan. 4, 1892.	R. $^{6}/_{12}$.	R. ± 2, ax. 175°.	R. c. − 1, ax. 180°, V. = $^{6}/_{6}$.	R. 1·00.
		L. $^{6}/_{15}$.	L. ± 3, ax. 170°.	L. c. − 1·50, ax. 180° ⊃ c. + 0·50, ax. 90°, V. = $^{6}/_{6}$.	L. 1·00.
	Jan. 5th.	R. $^{6}/_{12}$.	R. ± 1·50, ax. 175° or 100°.	R. c. − 1, ax. 180°, V. = $^{6}/_{5}$.	R. 0·50.
		L. $^{6}/_{15}$.	L. ± 2·50, ax. 175°.	L. c. − 2, ax. 180° ⊃ s. + 0·50, V. = $^{6}/_{5}$.	L. 0·50. The axes did not correspond in either examination.
3	Miss McIlvain, Feb. 5, 1892.	R. $^{6}/_{15}$—.	R. ± 2·75, ax. 180°.	R. c. − 2·25, ax. 10°, V. = $^{6}/_{9}$—.	R. 0·50.
		L. $^{6}/_{20}$—.	L. ± 3, ax. 180°.	L. c. − 2·75, ax. 180°, V. = $^{6}/_{9}$.	L. 0·25.
	Feb. 8th.	R. $^{6}/_{20}$+.	R. ± 2·75 (or 3), ax. 172°.	R. c. − 2·25, ax. 1·80°, V. = $^{6}/_{9}$.	R. 0·50.
		L. $^{6}/_{20}$+.	L. ± 3 (or 3·25), ax. 172°.	L. c. − 3, ax. 180°, V. = $^{6}/_{9}$.	L. 0.
4	Miss Nellie Button, 16 yrs.; Oct. 23, 1891.	R. $^{3}/_{60}$.	R. ± 5, ax. 165°.	R. c. − 4, ax. 165° ⊃ s. − 5·50, V. = $^{6}/_{20}$.	R. 1·00.
		L. $^{4}/_{60}$.	L. ± 4·50, ax. 180°.	L. c. − 4, ax. 180° ⊃ s. − 5·50, V. = $^{6}/_{20}$.	L. 0·50.
5	Mr. S. Russell, Dec. 1, 1891.	R. $^{6}/_{9}$.	R. ± 2, ax. 170°.	R. c. + 1·50, ax. 80°, V. = $^{6}/_{12}$.	R. 0·50.
		L. $^{6}/_{20}$.	L. ± 3, ax. 160°.	L. c. + 3·50, ax. 70°, V. = $^{6}/_{9}$.	L. 0·50.
6	Miss Bessie Bickford, Dec. 31, 1891.	R.	R. ± 2, ax. 10°.	R. amblyopia *ex anopsia.*	
		L. $^{6}/_{15}$.	L. ± 2, ax. 170°.	L. s. + 6 ⊃ c. − 1·50, ax. 170°, V. = $^{6}/_{12}$+.	L. 0·50.
7	Mrs. C. E. Bush, Feb. 26, 1892.	R. $^{6}/_{60}$.	R. ± 2, ax. 150°.	R. c. + 1·50, ax. 60° ⊃ s. + 2·50, V. = $^{6}/_{6}$—.	R. 0·50.
		L. $^{6}/_{60}$.	L. ± 3, ax. 30° or 130°.	L. c. + 2, ax. 130° ⊃ s. + 2, V. = $^{6}/_{12}$.	L. 1·00.
	March 5th.	R. $^{6}/_{30}$.	R. ± 1·50, ax. 155°.	R. s. + 3·50 ⊃ c. − 1·50, ax. 155°, V. = $^{6}/_{9}$.	R. 0.
		L. $^{6}/_{30}$.	L. ± 3, ax. 25°.	L. c. + 3, ax. 115 ⊃ s. + 1·75, V. = $^{6}/_{12}$.	L. 0.
	March 14th.	R. $^{6}/_{30}$.	R. ± 1·50, ax. 155°.	R. s. + 3·50 ⊃ c. − 1·50, ax. 155°, V. = $^{6}/_{9}$.	R. 0.
		L. $^{6}/_{60}$.	L. ± 3, ax. 25.	L. s. + 4·50 ⊃ c. − 3, ax. 25°, V. = $^{6}/_{12}$.	L. 0.

Summary.—Total cases, 7, or 14 eyes; total number of comparative examinations, 21.

Ophthalmometer and trial lenses agreed	....	5, or 23%
Ophthalmometer greater than trial lenses by	0·25 D...	3, or 14%
" " " "	0·50 D...	9, or 42%
" " " "	1·00 D...	4, or 19%
		21

5. In the adjustment of the ophthalmometer and in the estimation of the amount of overlapping of the reflectors an error of ± 0·25 D. is not easy to eliminate. Hence another source of error in practical ophthalmometry.

In conclusion, permit me to add that I consider the ophthalmometer a useful adjunct to other methods of diagnosis. It serves to point the way to a probable diagnosis of astigmatism, and, in my experience, it is especially useful when the astigmatism is of high degree. More than this should not be claimed for it. It gives no information respecting the kind of astigmatism, whether it be simple or compound or mixed. The retinoscope and the ophthalmoscope, in the hands of ordinary men, do not, in the minor errors of refraction, give sufficiently definite information to supplement the ophthalmometer in this essential particular. We are, therefore, finally compelled to clinch or correct our diagnosis by resorting to the subjective method. The chief obstacle to a correct diagnosis of an error of refraction is the contraction of the ciliary muscle. Remove that obstacle and the problem is reduced to its lowest terms. Such problems may be most certainly reduced to their lowest terms by means of atropine.

March 28, 1891.

The Medical Society of the County of Otsego, N. Y., will hold its eighty-seventh annual meeting in Cooperstown on Tuesday, the 19th inst., under the presidency of Dr. H. D. Blanchard. In addition to the president's address, the following titles are announced: The Diagnosis of Diseases of Children, by Dr. M. K. Engell; and Hydronephrosis, by Dr. L. H. Quackenbush.

A DEVICE TO TAKE THE PLACE OF
THE CAMERA LUCIDA IN MICROGRAPHY;
ALSO AN IMPROVED MEANS OF OBTAINING CRITICAL ILLUMINATION FOR THE MICROSCOPE.

BY HENRY G. PIFFARD, M. D.

THE act of micrography, or the reproduction on paper of images of minute objects seen through the microscope, may be practiced in various ways, of which the three following are the principal:

1. The observer studies the object on the slide, and, when he thinks he has the outlines and details, or a portion of them, sufficiently impressed on his mind, withdraws his eyes from the tube and commits the mental picture to paper, using, of course, both eyes in directing the movements of his pencil. Success with this presupposes a retentive memory and considerable skill as a draughtsman.

2. The observer, looking down the tube in the usual way with one eye—for convenience, the left—is, after a little practice, enabled, by a sort of auto-projection, to see an image of the object on a sheet of paper by the side of the microscope. The outlines of this image he traces with the pencil, using the right eye to direct its movements, the observation and the reproduction being simultaneous.

3. By the aid of a camera lucida, of which there are many different sorts, a reflected or projected image is visible on the paper with the eye that is at the same time occupied in directly observing the magnified image of the object on the stage. In one of the latest forms of camera lucida—the Abbe—this use of half the eye for observing, and the other half for recording, is a reasonably convenient method if the observer's eye is approximately normal; marked myopia or hypermetropia, and still more pronounced astigmatism, necessitating the use of spectacles, render the use of the camera lucida inconvenient, if not well-nigh impossible.

Some time since it occurred to the writer that the practice of micrography could be greatly simplified by adapting the principles employed in ordinary projection, as used in connection with the optical lantern, the projection microscope, photo-micrography, etc. It was only a question of reflecting the projected image on to a piece of drawing-paper fixed in some convenient position. To this end I requested Messrs. Bausch & Lamb to mount a right-angled reflecting prism with a short tube extending from one of its square faces, this tube to be of such a caliber that it could be inserted into the microscope in the place of the eye-piece. From the other square face a similar short tube extends, capable of receiving the ocular and holding it firmly.

When preparing to use this device the object is placed on the stage and focused in the usual manner. The microscope is then brought to a horizontal position, the eye-piece is removed, and the prism case put in its place, the ocular being inserted in the short tube provided for its reception. The ocular should point downward. The lamp, or other source of light, should then be disposed in such a way that it properly illuminates the object to be examined, it being expressly understood that no light shall escape toward the observer except that which first reaches the object. A Beck lamp is conveniently adapted to this purpose. If a piece of drawing-paper is placed beneath the ocular and the room darkened, a brilliant image will be projected on the paper, and its reproduction with the pencil can be accomplished with a maximum of rapidity and a minimum of discomfort. In guiding the pencil the draughtsman uses both eyes, and his spectacles if needed, and sits in whatever position he finds most comfortable. The general disposition and arrangement of the apparatus will be readily understood by an examination of the accompanying cut (Fig. 2).

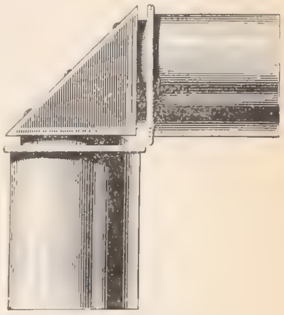

FIG. 1.—The author's drawing prism.

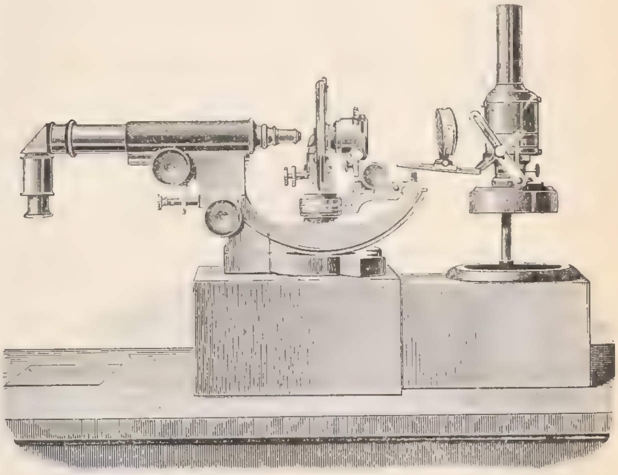

FIG. 2.—Showing lamp, microscope, and prism in position.

With a proper lamp and careful utilization of its light, this device gives excellent results with amplifications up to four and five hundred diameters.

If a sensitive photographic plate be substituted for the drawing-paper, an exposure of a few seconds will impress an image that may be developed in the usual way.

An Improved Means of obtaining Critical Illumination for the Microscope.—Critical illumination is that sort or kind of illumination which best conduces to the revelation of the intimate structure of microscopic objects. The illumination is said to be "critical" when the image of the radiant (lamp-flame or other source of illumination) is brought to a focus by mirror or condenser at the plane of the object under examination. Skilled microscopists are pretty well agreed that the most convenient and feasible means of obtaining critical illumination is by focusing the edge (not the flat side) of a half-inch kerosene flame on the object.

The writer is unable to use with comfort either gas or an oil lamp in microscopic work, but has found that he can work by electric light for several hours continuously without inconvenience. Attempts to obtain satisfactory critical illumination from this source have occupied a portion of his time during the past two years. Without referring to the devices he has abandoned, he will simply describe the one at which his experiments have terminated, leaving to others the opportunity to still further improve it.

The ordinary electric lamp in domestic use has an illuminating value of sixteen candles, and its thread-like filament is brought to incandescence by a current having an intensity of about half an ampère under a pressure (in the Edison system) of from one hundred and fifteen to one hundred and twenty volts. The light is distributed over a filament about five inches in length. Such a light is not a desirable one for microscopic work. It would be much better to have the light more condensed by the use of a shorter and thicker filament. There is no difficulty whatever in constructing such a lamp, but if it were brought directly into the Edison circuit, its life would be exceedingly brief; in other words, a certain length of filament is required to withstand the pressure of the current from the main. Two things, then, are needed: First, a lamp with a short and thick filament; and, second, a means of properly connecting it with the street service.

Having decided on the character and form of lamp desired, I applied to the Edison Lamp Works to have it constructed according to the plans and specifications which I furnished. These were carried out as requested, and the result was a lamp of fifteen-candle power requiring a current of about three ampères under a pressure of fifteen volts.

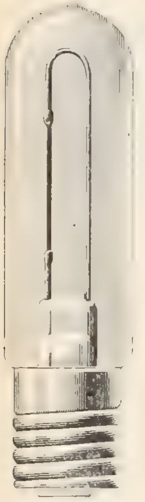

Fig. 3.—The author's electric illuminator.

The lamp in question possessed certain peculiarities of construction, as will be seen by an examination of the cut (Fig. 3). The glass bulb, instead of possessing the pear-shaped form usually met with, is cylindrical and about three inches in length by an inch in diameter. At first glance the carbon filament would appear to have the ordinary horseshoe form, and to be of the usual length (four to five inches). A closer inspection, however, shows that the carbon is actually but three quarters of an inch in length, while the rest of the apparent filament is composed of copper wire, arranged so as to hold and support the carbon in a vertical position. It will also be noticed that the carbon is much broader and thicker than in the ordinary domestic electric lamp. When this carbon is rendered incandescent by the passage of a suitable electric current, we will have, when the lamp is in position, a vertical streak of light of intense brilliance about three quarters of an inch long and apparently an eighth of an inch wide. The minified image of this is focused by mirror or condenser on the object we desire to examine, and constitutes "critical" illumination. If now we proceed to the examination of the object with, for instance, a quarter-of-an-inch objective, we observe that the field is not evenly illuminated, but, instead, a central brilliant streak, on each side of which the light is comparatively feeble. The portion of the object within the area of the streak is now illuminated in the manner most favorable for the revelation of its intimate structure. In systematic work critical illumination is rarely called for except as a means of control, and subcritical or diffuse illumination, as obtained by racking the condenser a little out of focus, is preferable and more commonly employed. The lamp here described furnishes a light for ordinary work which in many respects is preferable to any I have heretofore employed.

While this fifteen-volt lamp can be readily maintained at full incandescence by the current from an eight-cell storage-battery, the care of this latter is by no means an insignificant matter; and I am not prepared to recommend its use unless one has access to one of the street circuits. In this city we have at our disposal either the Edison circuit with a pressure of from one hundred and ten to one hundred and twenty volts, or the alternating current, distributed to houses under a pressure of fifty-five to sixty volts. If the fifteen-volt lamp be connected directly with either of these circuits, it would be instantly destroyed. It is necessary to neutralize or take up a portion of this pressure by the introduction of a suitable resistance. This can be conveniently accomplished on the Edison circuit by the interposition of a one-hundred-candle power, one-hundred-volt, three-ampère lamp of the "*municipal*" type, the two lamps being connected in *series*. Both lamps will, when thus arranged, burn at full incandescence; but, as we do not desire to employ the larger lamp, this may be placed under the table and covered with a box.

In photomicrography the writer has made use of nearly all the methods of artificial illumination that have been proposed, including the electric arc, electric incandescent with coiled carbon of one-hundred-candle power, calcium light, Welsbach gaslight, and kerosene oil. The lamp here described he finds infinitely more convenient and amply efficient.

For the study of absorption spectra by means of artificial light, this lamp gives an ideal illumination.

IS APPENDICITIS A PRIMARY OR A SECONDARY DISEASE?

By P. C. BARKER, M. D.,

MORRISTOWN, N. J.

Modern precision in diagnosis may account for a certain percentage of the cases of appendicitis that have been recognized and reported in medical journals during the last few years; but it will probably be admitted by most physicians of middle age that appendicitis is much more prevalent now than it was twenty or twenty-five years ago. No satisfactory explanation of this fact has been offered—perhaps none is possible—nor have any correlative facts been noted, or premonitory symptoms been detected and cited as probable predisposing causes of appendicitis. It has been noticed that catarrh of the cæcum, with or without paresis, is sometimes a concurrent condition; but no one seems to have suggested that a diseased appendix (probably) demonstrates the pre-existence of a more or less diseased cæcum. The condition of the appendix, its site, its size and length

—in short, all its varying peculiarities—have been collated from numberless post-mortem examinations and duly published; but the condition of the cæcum has generally been entirely ignored. It seems to have been universally assumed that the inflammatory process begins in the appendix, and that such lesions as may be found in the cæcum are just as much the effect of the appendicitis as are the abscess, the local or the general peritonitis that are so apt to follow it.

If one bears in mind the usual condition of the opening from the cæcum into the appendix, he will find it difficult to believe that any large seed or fæcal concretion of the size of a bean ever passed from the cæcum into the appendix unless the communicating slit-like opening had previously been somehow widened and enlarged. Those who make a practice of examining the cæcum and appendix in every case of abdominal section—as the writer has for more than thirty years, one of them in Bellevue Hospital—will concur with him in the statement that it is often difficult to discover the orifice of the appendix, even after the cæcum is fairly laid open and the site of the appendix fully disclosed. It has in some instances been found necessary to cut across the latter and insert a probe before the opening could be discovered. In these instances the orifice has usually been found either in the free edge of a fold of mucous membrane, or else securely tucked away beneath and at the base of one of them.

In the absence of any facts in favor of such an assumption it is incredible that the appendix should be specially liable to an inflammatory or any other morbid process because of any change that may take place therein, unless some foreign and extraneous matter is somehow introduced to occasion it. On the other hand, certain facts go to show that this very accident is liable to occur through an anatomical peculiarity of the cæcum. The mesocæcum is not infrequently so insufficient as to constrict the lumen of the canal at the junction of the cæcum and the ascending colon, and thus interfere with the proper performance of peristalsis. Or, if this insufficiency does not exist and constipation is extreme, the transverse colon, being generally loaded with fæcal masses, gradually descends and so drags upon the mesocæcum. In both conditions the results are the same. Peristalsis being interfered with, the cæcum is rarely if ever emptied. It is a fair speculative inference that, under these circumstances, the swarms of micro-organisms that successively work over these detained waste contents of the cæcum are more numerous here than in any other portion of the alimentary canal. It is a clinical fact that disengaged gases—imprisoned also very likely by the mesocæcum—not infrequently cause a relaxed and paretic condition of the cæcum. The writer has recognized and treated scores of such cases, and he knows that it is not an uncommon condition. While it may be unaccompanied by any special symptom that attracts the attention of the patient, there may be malaise, or a sense of distention at the McBurney point, with perhaps a corresponding feeling in the right lumbar region. The patient may be, and he generally is, more or less constipated; but it is also found in those whose bowels are perfectly regular.

Accepting these statements as facts, it is but a step to the conclusion that distention with paresis of the cæcum is really the usual predisposing cause of appendicitis. The paretic cæcum becomes distended with gas, the sacculi and folds become more and more effaced as the distention proceeds, and the slit-like orifice of the appendix assumes an oval or rounded, gaping mouth, into which seeds, concretions, etc., may find ready entrance. Pathogenic microorganisms would be likely to gain admission long before the enlarged opening would admit the smallest seed; and as foreign bodies of appreciable size are oftener absent than present in appendicitis, it is quite probable that these microbes not only gain admission to the appendix, but that they are the real exciting cause of the destructive inflammation.

As a mere speculative hypothesis, it might be suggested that the increased frequency of this disease mav be charged to some special organism—say the Klebs-Loeffler bacillus.

It may not be amiss to add a word about therapeutics, as applied to the views above expressed. For the distended and paretic cæcum I am in the habit of giving salol, nux vomica, and belladonna, with or without a laxative, as the condition of the bowels dictates. This treatment is continued for some time after the cæcum has returned to its normal diameter, as indicated by percussion. The patient is directed to keep watch of the case for himself, and to resume the treatment if any malaise or resonance is detected. Should a more decided and threatening attack occur, marked by pain, local tenderness, and febrile movement, then five-grain doses each of salol and phenacetin are given every two hours. After the pain and tenderness have abated somewhat, omit one dose of the antiseptic and analgesic remedies, and give a full dose of the mild chloride of mercury, with or without a saline cathartic added, as seems necessary. During the last three months I have had three cases of this character—two in young lads and one a man of fifty—and all three of them original seizures. All three made a speedy and satisfactory recovery.

Correspondence.

LETTER FROM PARIS.

Paris as a Place for Medical Study.—Ophthalmological Observations.—M. Péan.—M. Charcot.—The Ophthalmological Congress.

PARIS, *June 23, 1892.*

PARIS, though of all European cities the most favored by American tourists, seems to find but little favor in the eyes of students of medicine, who now flock to the Austrian and German seats of learning in preference, and in so doing make a mistake which is greatly to be regretted, for there is no other city in which one acquainted with the language feels himself so much at home; and there is no place that presents so many attractions as Paris does, and these, from a medical standpoint, are various and vast. The advantages to be derived from a prolonged stay here can not be overestimated, and study is facilitated by the enormous material at hand. The clinics are large and numerous, the hospitals are capacious and well managed, the laboratories are well equipped, and, above all, the medical men are most learned and most masters of their profession. With these ἄριστοι of medical advantages, it will be seen that one can go farther and fare worse, but that improvement is not feasible.

The season selected for my trip to Paris could not have been better chosen, as work was at its zenith, the vacations beginning late and lasting but a short period—viz., one or two months. I have had the opportunity of observing many customs and hearing many things that are strange to us; it has also been in my power to inform our French colleagues of our *modus operandi* in many cases, which suggestions were received, if not acted upon, with true French politeness.

The system of private clinics existing here has attracted my attention. It is worthy of adoption by us. Every physician or surgeon of prominence has a clinic of his own where he is *magister solus*. These clinics are uniformly in the Latin Quarter, and vary in size from a suite of rooms to an entire building. In the latter case one floor is devoted to "out-patients," and the other floors are given up to operations. The "out-patient" departments are for the treatment of the poor, and the operative departments for the poor and also for those who are unable to pay for professional treatment at their own residences, but who still can pay something. All the patients are treated with great courtesy and politeness, and in the examination and subsequent treatment of each patient much zeal and conscientiousness are shown.

Being ophthalmologically disposed, I have had occasion to visit the various eye clinics—viz., those of De Wecker, Galezowski, Panas, Abadie, Mayer, Landolt, and others. The French are a very inventive people, and show this in the numerous instruments, appliances, and operations that they describe. I have ascertained that no fewer than six operations are being employed here in the treatment of trachoma, one newer than the other. One of the best is being performed by Dr. Galezowski. It is applicable principally to acute trachoma, and consists in the removal of a portion of the transition fold of the palpebral conjunctiva of the upper lid without injuring the tarsal cartilage, Galezowski's theory being that trachoma originates in this place, and that excision, followed by appropriate treatment, succeeds in disposing of the disease. The after-treatment consists in the application of a strong nitrate-of-silver solution or of the mitigated stick. I have seen beneficial results follow.

De Wecker is treating detachment of the retina by cauterization of the ocular conjunctiva with the thermo-cautery. He no longer employs either pilocarpine or scleral puncture.

Landolt, in common with many others, is treating entropion by means of the galvano-cautery. It is a short and simple operation, and the results that I have seen justify its use in this deformity.

I have seen a few unfortunates who had trachoma treated by the galvano-cautery. One word explains the result—symblepharon. Abadie still continues *grattage* for the treatment of trachoma, and, according to his statement, has good results; but the operation is not a success, the technique and results being against its continuance.

It will repay one to attend the clinique of M. Péan. He is a fine operator, and, after leaving the operating theatre, one arrives at the conclusion that the French have made great advances in surgery.

M. Charcot at the Salpêtrière always has a large audience at his hypnotic *séances*, but it must be confessed that his audiences are not always composed of medical men, many curiosity-seekers being easily counted among the number.

The *Congrès ophthalmologique* which took place last month in Paris deserves a few words of mention. It was held in the Latin Quarter, and began every day at the unseasonable hour of 8.30 A. M. Those who submitted to this inconvenience found the congress well worth visiting. The congress was fairly well attended, numerous papers of varying interest were read, and they were followed by long discussions. Among them I may mention one by Dr. X. Galezowski, on a new cataract operation, a full description of which, with statistics, I shall submit at a future date; and one by Dr. Armaignac, of Bordeaux, on the various ophthalmoplegiæ (he regards this condition as a neuritis which may be either nuclear or peripheral, the neuritis existing in any portion of the third nerve between its origin and its distribution). These were the best papers read. Others were: The Surgical Treatment of Granular Conjunctivitis, by Dr. Wickerkiewicz, of Posen (he advocates scarification and the use of the galvano-cautery); and a paper with the same name by M. Abadie, of Paris, whose mode of treatment is too well known to require further mention. Dr. George J. Bull, formerly of New York, read a paper on asthenopia. He is one of the few advocates of the Javal-Schiötz ophthalmometer in Paris. Dr. Landolt showed an instrument which he dignifies by the name of kinophthalmoscope. It consists of a piece of transparent (window) glass (6″ × 5″), a parallelogram in shape, mounted on a handle. The glass has scratched on its surface letters or other characters. The patient is requested to read this, and the movements of the eyes can be observed by the examiner, who looks through the glass. Valuable observations are said to have been made with this instrument.

I must mention, in conclusion, a paper that attracted some attention on account of its unique character. It was by a M. Granchet, of Paris, and was entitled The Treatment of Panophthalmitis (after loss of the eye). The operation proposed is a modified evisceration. An incision is to be made in the cornea and the nozzle of a syringe inserted, with a pressure of two atmospheres (perceptible pressure upon a ball-syringe); the lens is expelled, and this is followed by the vitreous humor. The cavity is to be irrigated until the water escapes without being discolored. A mild antiseptic, such as a 1-to-10,000 solution of corrosive sublimate, is employed. Inflammation and inflammatory reaction subside in two or three days, and then a glass ball is to be inserted into the cavity of the eyeball and sewed in with sutures. This operation has the same objections as evisceration —viz., meningitis and sympathetic ophthalmia—and, as the sole object is to gain a movable stump, too much is risked. The author naturally professes to have had excellent results. M. Granchet is a very witty gentleman, and at the present moment I have not decided which was most appreciated and which was of most value, his wit or his paper.

The Barnes Medical College, of St. Louis.—Mr. Robert A. Barnes, who recently died in St. Louis, left provision in his will for the erection and endowment of a hospital to bear his name and to be under the control and management of the Methodist Church. The gift amounted to more than a million dollars. During the sixty-two years that he resided in St. Louis Mr. Barnes contributed largely to many charitable and educational institutions. He is credited with having built no fewer than fifteen churches in the southern part of Missouri. As an expression of appreciation and as an honor to the memory of Mr. Barnes, those having in view the origination of a new medical college named it the Barnes Medical College. Among the faculty are Dr. C. H. Hughes, Dr. A. M. Carpenter, Dr. J. T. Jelks, Dr. William Dickinson, Dr. John W. Vaughan, Dr. Pinckney French, Dr. Frank D. Wright, and Dr. S. C. Martin.

Change of Address.—Dr. Frank N. Lewis to No. 127 Madison Avenue.

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THE AMERICAN MEDICAL ASSOCIATION.

At the meeting of the American Medical Association in Washington in 1891 the chairman of the Section in Dermatology reported that he had been unable to secure sufficient attendance to warrant the calling of his section together, and accordingly recommended that the section be abolished. Apparently this awakened general interest in the amount of work that was being done by the sections, and a committee was appointed to investigate the causes for the existing conditions and to recommend the necessary remedies.

The report of this committee is published in the *Journal of the American Medical Association* for June 25th, and in it regret is expressed that the sections have not achieved the commanding position in American medicine which they should occupy. It seemed to the committee, after mature deliberation, that the remedy for this failure was to secure more time for the section meetings by appointing an executive committee of three members for each section to give special attention to its interests; and the committees of all the sections should form a general business committee which would attend to the general business of the association that now occupies, with the general addresses, all the morning hours during the association's meeting. With the adoption of this report the association starts upon its new year.

It does not seem to us that the committee struck the key of the trouble. Verily the medical profession has progressed since the organization of the American Medical Association, and features of that day and generation are not matters of overwhelming interest to-day. As long as the association devotes so much of its time to the discussion of ethics, carrying it on in such a manner that the report reads: "The excitement was so intense and the discussions so heated that we deem it prudent to omit them," so long will the more prominent members of the American medical profession refrain from attending the meetings.

Contrast the programme for the coming meeting of the British Medical Association with that of the recent meeting of our own association! And not only for this, but for many years has the former been infinitely better. It works scientifically; ethical discussions are as alien to it as they are within a first-class scientific organization of any sort.

Insistence upon such discussions has resulted in the organization of the various special societies and of the triennial meeting of a general congress of all these societies. Some day the American Medical Association will realize that tomes on ethics will not be looked upon as its legitimate work, and we hope this awakening will not come too late to enable the association to regain the ground it has lost.

ELECTROTHERAPEUTICS.

From its very nature, electricity as a therapeutic agent possesses considerable uncertainty and leaves room for the greatest enthusiasm as well as for the greatest nihilism. Ever since its first introduction into the field of therapeutics there have been physicians who have sung its praises, as well as others who have looked upon it as a *placebo* or as a legitimate means of acting upon the psychical centers. The latest and most powerful skeptic as to any physical effect of electricity as a remedial agent in disease is Möbius. This observer does not deny to electricity a remedial power, but he maintains that whatever it is capable of affecting in that way it does solely through "suggestion." In a recent number of the *Berliner klinische Wochenschrift* Professor Eulenberg joins issue with Möbius and takes up the cudgels for electricity. His utterances deserve consideration, inasmuch as they do not appear to be the outcome of heated discussion and impress one with their impartiality. He states that the gist of Möbius's first thesis is as follows: There is no evidence to show that electricity is curative in organic paralyses, for paralyses due to disintegration of the central nerve elements are incurable; paralyses due to affection of the peripheral nerves or muscle fibers undergo spontaneous cure, so far as they are capable of being cured, and there are no facts to show that the regeneration process is hastened by electricity. Indirect central paralyses and the so-called light peripheral paralyses also undergo restitution without any external aid. In answer to this, Eulenberg adduces evidence to show that the various paralyses are benefited by electricity. He quotes Remak's results in fifty-one cases of the lighter forms of paralysis from compression. The cases treated by electricity were cured on an average in seven séances, or thirteen days; the cases treated on the expectant plan took from four to six weeks, and a few took from three to five months before normal function was restored.

He concedes that there is no incontrovertible evidence to show that in cases of degeneration the regeneration process is hastened by electricity; but, on the other hand, it does not admit of doubt that the local nutrition of the affected parts is materially benefited by it.

The experiments of Déjérine are conclusive on this point. He divided both sciatic nerves in two guinea pigs, and subjected one leg to daily electrization for a month. At the end of this period it was found that the leg treated had no spots of gangrene or only very small ones, the atrophy was much less marked, and the electrical irritability to the faradaic current had not undergone so much diminution. The observations of several other investigators are referred to as showing similar results. It is remarkable what benefit may be derived from the persistent use of electricity in cases of traumatic paralyses even of several years' standing and attended with marked atrophy. Duchenne had already published accounts of such cases in which the paralyses and atrophy had remained stationary for four and five years. Spontaneous cure in these cases was entirely out of the question. It is too sweeping to assert that paralyses due to disintegration of the nerve centers are totally incurable, for experience shows that the majority of persons suffering with apoplectic hemiplegia regain, to a certain degree, the functional activity of their paralyzed muscles, and the degree to which this is attained is dependent, in a great measure, upon the early and continued use of electricity. It not infrequently happens that regeneration in the nerve center or in the peripheral nerves has taken place, and yet the paralysis persists. This is probably from atrophy of the muscles on account of disuse or from inactivity of the antagonistic muscles. Here the employment of the electrical current is followed by rapid restitution of power in the paralyzed member. The unequal results obtained by electricity do not argue in favor of the "suggestion" theory, for the same inequality is observed in the therapeutic results of agents whose action rests on a physical basis. For instance, how differently will morphine, alcohol, chloral, etc., act upon the protoplasm of the nerve cells of different individuals!

If therapeutists would bear in mind that we have few remedies that can be classed as specifics, and that cases are met with of almost every disease against which our art seems to have no power, a just estimate of any remedial agent, let it be electricity, hydrotherapy, chloral, quinine, or the like, would sooner be reached. Any one who has employed electricity in the treatment of disease, and who at first had not been dazzled by enthusiasm or blinded by prejudice, will, we think, have arrived at the conclusion that its use rests on a safe basis, and that as much can be alleged for it as for any other therapeutic measure we have at our command. To say more for it is to bring it into disrepute; to say less is to show evidence of prejudice.

MINOR PARAGRAPHS.

THE SENSE OF TASTE.

Physiology has not as yet determined the existence of a taste center or the particular nerves that transmit gustatory sensations; and while the latter have been divided into sweet, bitter, acid, and saline, the researches of Camerer, von Vintschgau, Shirmer, Aducco, and others, have not done more than add to our knowledge of certain features regarding these sensations. In a recent contribution to the *Journal of Physiology* Dr. L. E. Shore adds to this knowledge by narrating the outcome of certain experiments made with a substance obtained from the leaves of the *Gymnema silvestre*, an asclepiadaceous plant occurring in India and Africa. The leaves of the plant when chewed, as well as a derivative obtained from them, have a paralyzing influence on the nerves that convey sweet and bitter tastes. The first thing determined was the normal taste recognition of different localities of the tongue. The taste for sweet and acid substances was most acute at the tip, least so at the back; that for bitter substances was most acute at the back, least acute at the tip; and that for both bitter and acid substances was more acute on the left than on the right edge. Saline substances were recognized equally in each locality and there was no taste on the dorsum. The gymnema decoction prevented a sweet taste in all regions, but did not so easily prevent a bitter taste, especially at the back of the tongue. Saline and acid tastes were not affected. It did not prevent tactile perception, nor the perception of induction shocks, but it prevented taste due to mechanical stimulus and perverted the tastes that follow the passage of the electrical current. Experiments were then made with cocaine, resulting in the following sequence of loss of sensation: general feeling, bitter taste, sweet taste, salt taste, acid taste, tactile perception. With these two drugs his experiments confirmed the old theory that there are a number of different kinds of nerve endings or end-organs scattered in varying relative density in different regions of the tongue; and taste in a particular area may be explained by the excitation of one kind of ending only, as is the case with substances possessing a pure sweet or pure bitter taste. No taste is excited if the particular kind of ending does not exist in the area.

FUNERAL REFORMS.

The *Lancet* states that the fashion of standing bareheaded at funerals seems to be losing ground. The death of the young Duke of Clarence and of many others of only a little less prominence than he in England, caused by funeral exposures in midwinter, has attracted attention, "and, what is better, has kept it there," to the need of new customs regarding the interment of the dead. The editorial writer in the *Lancet* further remarks that, if the reform takes good root and grows, he hopes that its influence will not be limited to cold weather, for it is no less injurious to many men to be compelled to expose their bared heads to the broiling sun in summer than for certain others to throw down the gauntlet to frost and snow and storm. In the English climate and that of our own northern sections there are not many months in the course of the year when it is safe for the male citizen to go about bareheaded, and it is none too early for the agitation of some sanitary protection to men's heads at funerals all the year through. We remember to have seen lately a narration to the effect that a lady, then recently widowed, sent a written request, on her own behalf and on that of her sons, to certain friends invited to the funeral of her late husband, that they would not remove their head-covering during the open-air part of the funereal observances. This was in midwinter no doubt, but the lady's example might well be followed at any time of the year.

ABSCESS OF THE HEART.

In the *Medical Press and Circular* for May 25th there is a note taken from a Parisian journal respecting this rare lesion. Dr. Cenas, of St.-Etienne, reports the case of a lad, eighteen years old, who was admitted to the hospital for typhoid fever. His pulse was 120 and dicrotic, and his temperature 103° F. There were present stupor, dyspnœa, and exaggerated cardiac action; no tympanites, and no abdominal eruption. There was a soft cardiac murmur. The case was thought to be one of endomyocarditis of typhoidal origin. The patient's condition did not change greatly during the first three days in hospital, but on the fourth day the pulse went up to 140 and the cardiac excitement was increased. The tongue became red and parched, and diarrhœa set in for the first time. There was also a distended abdomen. The patient sank rapidly. At the autopsy the heart was carefully examined. Vegetations on the tricuspid valve were found, and about half an inch beneath it there was a small aperture in the ventricular sæptum, which led to an abscess cavity of about the size of a crown piece. Abscess of the heart is not a pathological rarity, as it has been observed in endocarditis with ulceration, but when found independently of such origin it is decidedly rare. In this case the heart was apparently healthy in every respect other than being the seat of the abscess.

THE MILITIA SURGEONS OF CANADA.

THE *Montreal Medical Journal* announces that an Association of the Medical Officers of the Militia of Canada has been formed. Over twenty charter members attended the first annual meeting, and quite a number of appropriate papers were ready and presented. Among the officers chosen for the ensuing year were: Honorary president, Surgeon-General Bergin; president, Surgeon F. W. Strange; vice-presidents, Dr. Moore, Dr. Roddick, Dr. Connell, Dr. McGillivray, Dr. Jenkins, Dr. Orton, and Dr. Duncan; secretary, Surgeon G. Sterling Ryerson, of Toronto.

INDIAN TYPES OF BEAUTY.

AT a recent meeting of the Philosophical Society of Washington Dr. R. W. Shufeldt read a paper with this title, and illustrated his remarks with the aid of the stereopticon. The paper has been published in the *American Field* and reprinted in pamphlet form with a number of excellent reproductions of photographs of individuals of various aboriginal tribes. Some of the Indian women evidently are not without comeliness, as is shown especially in the portrait of an Apache maiden. Her facial expression is really attractive. Dr. Shufeldt's paper is an interesting contribution to the literature of anthropology.

WOMEN PHYSICIANS.

DR. S. WEIR MITCHELL, in his recent novel, *Characteristics*, makes the following remarks on the question of women physicians: "I did not believe it was best, either for the sick or for society, for women to be doctors; that, personally, women lose something of the natural charm of their sex in giving themselves either to this or to the other avocations until now in sole possession of man." Women doctors "fail to realize what they have lost. The man who is sensitive to womanly ways sees it. It is worse than nursing the sick, for even nursing makes some women hard."

A NEW EAST INDIAN MEDICAL JOURNAL.

THE *Medical Reporter*, edited by Dr. Lawrence Fernandez and published in Calcutta, is a new monthly journal of general medicine. The last issue to reach us is the sixth number of the first volume, for the month of June. After an examination of the numbers that have thus far appeared we feel warranted in saying that the *Reporter* is a most excellent journal, and that it is particularly strong in its editorial matter.

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending July 12, 1892:

DISEASES.	Week ending July 5.		Week ending July 12.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	2	1	0	0
Typhoid fever	13	3	11	18
Scarlet fever	60	3	27	14
Cerebro-spinal meningitis	1	0	3	3
Measles	234	19	277	35
Diphtheria	55	17	54	27
Small-pox	1	0	5	2

The American Orthopædic Association will hold its sixth annual meeting in New York on the 20th, 21st, and 22d of September, under the presidency of Dr. Benjamin Lee, of Philadelphia. Besides the president's address, the programme gives the following titles: Report of a Case of Spontaneous Dislocation of the Hip Joint, by Dr. B. E. McKenzie, of Toronto; Adduction following Fracture of the Neck of the Thigh Bone, by Dr. H. Hodgen, of St. Louis; Osteitis Deformans, with a Report of Two Cases, by Dr. Henry Ling Taylor, of New York; Lateral Dislocation at the Knee Joint due to Local Disease or Paralysis, with Especial Reference to Treatment, by Dr. T. Halsted Myers, of New York; Plaster-of-Paris Orthopædics, by Dr. A. J. Steele, of St. Louis; The Orthopædic Treatment of Infantile Spinal Paralysis, by Dr. John Ridlon, of Chicago; A Report of Two Years' Operative Work in the Hospital for the Ruptured and Crippled, by Dr. V. P. Gibney, of New York; Lateral Curvature, by Dr. E. H. Bradford, of Boston; The Classification of Hip Disease, by Dr. R. W. Lovett, of Boston; A Study of Some of the Problems in the Mechanical Treatment of Hip-joint Disease, by Dr. Newton M. Shaffer, of New York; Experiments demonstrating the Ætiology of the Various Deformities in Hip-joint Disease, by Dr. A. M. Phelps, of New York; Some Remarks on the Ætiology of Club-foot, by Dr. Samuel Ketch, of New York, At what Age shall the First Treatment of Congenital Club-foot be Instituted? by Dr. H. Augustus Wilson, of Philadelphia; The Non-operative Treatment of Congenital Club-foot, by Dr. A. B. Judson, of New York; The Non-operative Treatment of Club-foot in Young Infants, by Dr. R. W. Lovett, of Boston; Manual Replacement in the Treatment of Club-foot, by Dr. ApMorgan Vance, of Louisville; The Treatment of Club-foot by Continuous Leverage, by Dr. Henry Ling Taylor, of New York; The Place of Traction in the Treatment of Club-foot, by Dr. Newton M. Shaffer, of New York; The Use of the Wrench in the Treatment of Club-foot, by Mr. Robert Jones, of Liverpool; The Operative Treatment of Club-foot, by Dr. DeForest Willard, of Philadelphia; An Analysis of Bone Operations in Club-foot, especially Enucleation of the Astragalus, by Dr. V. P. Gibney, of New York; The Treatment of Resistant Club-foot, by Dr. E. H. Bradford, of Boston; An Easy Way to hold the Operated-on Club-foot in the Corrected Position while the Plaster-of-Paris Splint Sets, by Dr. H. M. Sherman, of San Francisco; Means for the Prevention of Relapse in the Treatment of Club-foot, by Dr. B. E. McKenzie, of Toronto; The Necessity for Mechanical Treatment after Operations for Club-foot, by Dr. W. R. Townsend, of New York; A Case of Club-foot with Rare Complications, by Dr. A. J. Steele, of St. Louis; and papers (titles not announced) by Dr. T. Halsted Myers, of New York, Dr. R. H. Sayre, of New York, Dr. H. L. Burrell, of Boston, and Dr. J. C. Schapps, of Brooklyn. On Tuesday evening, at eight o'clock, Dr. Lewis A. Sayre will receive the members and guests of the association at his house, No. 285 Fifth Avenue.

The Death of Professor Biermer, of Berlin, in his sixty-fifth year, is announced in the *Prager medicinische Wochenschrift* as having taken place on the 24th of June.

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from July 3 to July 9, 1892:*

WOLVERTON, WILLIAM D., Lieutenant-Colonel and Assistant Medical Purveyor, will, on the expiration of his present leave of absence, proceed to Fort Omaha, Nebraska, and report in person to the commanding officer of that post for temporary duty during the absence of ALBERT HARTSUFF, Major and Surgeon, on leave.

WARE, ISAAC P., First Lieutenant and Assistant Surgeon, is relieved from duty at Fort Douglas, Utah, and will report in person to the commanding officer at Fort Logan, Colorado, for duty at that post, relieving WILLIAM L. KNEEDLER, Captain and Assistant Surgeon. Captain Kneedler, on being relieved, will report in person to the commanding officer, Fort Mason, California, for duty at that station, relieving HARRY O. PERLEY, Captain and Assistant Surgeon.

PERLEY, HARRY O., Captain and Assistant Surgeon, on being relieved from duty at Fort Mason, California, will repair to Washington, D. C., and report in person to the Surgeon-General for duty in his office.

Naval Intelligence.—*Official List of Changes in the Medical Corps of the United States Navy for the week ending July 2, 1892:*

BAGGS, C. P., Assistant Surgeon. Ordered to the Naval Hospital, Mare Island, Cal.

DRENNAN, M. C., Surgeon. Detached from the Naval Academy and ordered to the Navy Yard, Norfolk, Va.

WINSLOW, G. F., Surgeon. Detached from the Navy Yard, Norfolk, Va., and to wait orders.

STOKES, C. F., Assistant Surgeon. Detached from the Naval Hospital, Mare Island, Cal., and to wait orders.

LUNG, G. A., Assistant Surgeon. Detached from the Naval Hospital, New York, and ordered to the U. S. Steamer Minnesota.

BARBER, G. H., Assistant Surgeon. Detached from the U. S. Steamer Minnesota and ordered to the Naval Hospital, New York.

MEANS, V. C. B., Passed Assistant Surgeon. Detached from the Navy Yard, New York, and ordered to the Naval Hospital, Norfolk, Va.

DRAKE, N. H., Passed Assistant Surgeon. Detached from the Naval Hospital, Chelsea, Mass., and ordered to the Navy Yard, New York.

PAGE, J. E., Assistant Surgeon. Detached from the Receiving-ship Independence and ordered to the U. S. Steamer Thetis.

Society Meetings for the Coming Week:

TUESDAY, *July 19th:* Medical Society of the County of Otsego (annual—Cooperstown), N. Y.

Letters to the Editor.

THE BOARD OF HEALTH OF THE CITY OF NEW YORK.

NEW YORK, *July 8, 1892.*

To the Editor of the New York Medical Journal:

SIR: A great deal has been said in the newspapers and elsewhere about the action of the board of health in making certain changes in the department under its control, and, while there can be no doubt that, all things being equal, politics does have an influence in the making of appointments, I can safely say that during the ten years that I was a medical officer in the department there was not one dismissal for purely political reasons, even though the different boards varied greatly in their make-up. The nearest approach to persecution was at a time when one of the members of the extremely conscientious consulting board who have just resigned was a commissioner.

While the law expressly forbids dismissal without cause, the department is justified in promoting men over the heads of those of mediocre ability or changing its bureaux, and perhaps this is the reason why Dr. Edson was put into a place of greater usefulness and Mr. Prentice was dropped. It has for years been a wonder to the writer why a change was not made long ago in the legal department, whose utter inefficiency has long been a matter of comment. AN OLD INSPECTOR.

Proceedings of Societies.

NEW YORK NEUROLOGICAL SOCIETY.

Meeting of June 7, 1892.

The President, Dr. M. A. STARR, in the Chair.

Primary Myopathy.—Dr. FREDERICK PETERSON presented a case of primary myopathy in a man, aged forty-five years, who had come to the Vanderbilt Clinic a few days previous to the report. Four years and a half before, the patient had noticed a drooping and weakness of the shoulders. He had attributed this to his hard work as a mason. Gradually this weakness had increased and spread to other parts of the body. The most striking feature at first sight was the "winged scapula" of serratus paralysis on both sides. Besides the serrati, there was complete wasting of the sternal portion of each major pectoral, and there was marked diminution in size of both long supinators, of the right triceps and biceps, of both trapezii, and of the right thigh and buttock; there was also slight asymmetry of the mouth and forehead, as if the right half of the face were somewhat involved. As was to be seen on examining the patient, the forearms and hands were absolutely free from the disease. The deltoids were large as compared with the wasted muscles about the shoulders; they were very firm and might possibly have been hypertrophied. Both calves were comparatively large. There was no anæsthesia anywhere, and there were no fibrillary twitchings. The knee-jerks and wrist-jerks were perfectly normal. All the muscles reacted to faradism, but there was a quantitative change in the reaction in direct proportion to the amount of wasting. The case was interesting because of its rarity. It was, of course, not an Aran-Duchenne, or peroneal, type of progressive muscular atrophy. It was a primary myopathy, and the only question n the mind of the speaker was whether to consider it an Erb's juvenile form or a Landouzy-Déjérine type.

Dr. B. SACHS thought that the case presented pretty distinctive features of primary dystrophy rather than of any other form. He had seen two cases of the juvenile type of progressive muscular atrophy in adults, which corresponded in many particulars to the one presented by Dr. Peterson.

Heterotopia of the Spinal Cord.—Dr. IRA VAN GIESON read a paper on the subject of bruises of the cord as related to the cases of so-called heterotopia, or congenital malformations of the cord substance. Examination of the literature of the subject showed thirty cases of congenital malformation to have been published. According to the author, only six of these represented, microscopically, true heterotopia, the remainder being post-mortem bruises of the cord mistaken for other pathological conditions. After very careful study of the literature and of all the available microscopic specimens, and after experimental work, the speaker had been forced to the conclusion that most of the malformations of the cord that had previously been published were really cases in which the cord had been injured in the removal and in the process of hardening. The publication of so many cases of heterotopia of the cord in which no corresponding symptom had been present during the life of the individual had instigated him to a thorough study of the subject. The methods of removing the cord had first been looked into, to ascertain to what extent injury might take place during operations. Microscopic examinations had been made of cords in which bruising was not supposed to have taken place, and also of those where bruising had been done experimentally. Again, in the case of persons of neuropathic disposition, the cords had been carefully studied to find what proportion of malformations existed in this class. The fact that microscopic examinations of cords accidentally or experimentally bruised showed the same distortion or displacement of the constituent parts as the specimens exhibited by the various authors on the subject in cases reported as cases of congenital malformation, had led to doubt at once of their having been cases of true heterotopia of the cord. The speaker said that it was very easy to mistake such distortion for malformation when the cord did not show any gross injury. It took very slight pressure on a cord in a recent state to cause separation of its structures. The evidence of such injury would show itself in the section by a displacement of some of the white or gray matter to a higher or lower level or by one or more of the horns being crowded to one side or the other or being almost or quite obliterated. The proof of such an injury being the cause of the displacement was that in making further sections the absent or distorted portions would be found in different situations. The author illustrated the subject by a large number of lantern slides, the specimens having been taken from his own and other observers' work. In the course of his remarks he referred to the specimens which were labeled malformations of the cord in cases of acute myelitis. He did not see how it was that the fact of the extreme softening of the cord which always took place in this disease had been overlooked, making it almost impossible to handle the cord without inflicting injury, so that sections in such cases would be sure to show distortion of some of its elements. Very careful analysis of these cases pointed clearly to their being post-mortem injuries and not congenital malformations of the cord. Some of the specimens showed how pinching, bruising, or doubling of the cord produced the abnormal conditions, such as enlargements or small nodules, which were frequently seen, and, microscopically, how masses of gray matter might be found in the white substance, the gray horns attenuated, enlarged, distorted, or absent in part or wholly, the presence of three or more horns, and also why the fibers were sometimes found taking abnormal directions. From his very thorough study of the subject the author had been forced to believe that, if he could produce experimentally conditions identical with those that had previously been described as congenital malformations, he was very much in doubt as to their being genuine. And also the fact that such abnormal conditions of the cord had not produced any corresponding symptoms in itself militated very much against the diagnosis of cord disease. [Dr. Van Gieson's paper will be published in full.]

Dr. Sachs thought that the author had done a very courageous work indeed, and was very much surprised that out of the workings of so many scientific men there could be so much doubt as to their accuracy in manipulations. It seemed curious that they should all have overlooked an element of danger, such as injury of the cord, which might obscure any possible abnormal condition, and not have recognized it. He had removed a great many cords and was not aware that he had ever bruised them to the extent of obscuring the condition present; he was, however, glad to hear that there was such an element of danger, and was prepared to take precautions to avoid it. He inquired of the author how he handled cords so as to preclude the possibility of injury.

Dr. Van Gieson said that, in the first place, the mallet and chisel were to be avoided, as the blow or jar upon the cord was a fruitful source of injury, and also that, if the chisel was forced against the cord, while it had resilience enough to spring back and not show the pressure, it would microscopically, and these instruments should not be used. The author always employed a saw and scissors, and for the process of hardening, the cord should be suspended in a tube.

Reports on the Progress of Medicine.

GENERAL MEDICINE.

By JOHN WINTERS BRANNAN, M. D.

The Medical Treatment of Cystitis.—Dr. James Tyson contributes an interesting paper with this title to the February number of the *Practitioner.* He opens by saying that the medical treatment of cystitis does not furnish a very satisfactory chapter in therapeutics. The physician is sometimes called upon to treat cases in which the exciting cause, such as a stone or obstruction in the urethra, has been removed by the surgeon. He has also to treat certain other cases in which no removable cause is ascertainable, as well as cases in which, as with a long previous gonorrhœa, the cause has long since been removed, but has left a deep-rooted tendency scarcely eradicable.

Acute cystitis is less commonly met by the physician than the chronic form. Its treatment is much simpler and more satisfactory. Rest in bed is a primary and essential condition. Leeches may be applied to the perinæum with advantage. A poultice to the same region and over the abdomen is always useful, and a saline laxative should never be omitted.

As the urine is usually scanty, concentrated, and irritating to the inflamed mucous membrane, it is desirable to increase the secretion, and thus dilute it. The patient should be given large quantities of pure water, to which the citrate or acetate of potassium may be added, in doses of fifteen to twenty grains for an adult. Spirit of nitrous ether, in two-drachm doses every two hours, is also of great service.

Where there are much pain and straining, opium is indispensable, always in the shape of a suppository. Rectal injections of ice water and the insertion of pieces of ice into the rectum are also very efficient in allaying pain and irritation.

The successful treatment of chronic cystitis is a much more difficult task. The constant presence of the urine in the bladder is very irritating to the inflamed mucous membrane. Diluents should be used freely, as in the treatment of acute cystitis. The mistake is sometimes made of adding alkalies to the fluid ingested, whereas the indication in chronic cystitis is to render the urine acid, if possible. Benzoic acid may be used for this purpose, but at least thirty grains a day must be given to produce any effect.

The vegetable acids should not be employed, as they are all eliminated as alkaline carbonates. After diluting the urine, the second indication is to medicate the inflamed surface. Two ways suggest themselves: (*a*) by the internal administration of drugs; (*b*) by the injection of medicated liquids into the bladder. Dr. Tyson has no confidence in the infusions and decoctions usually prescribed—such as buchu, pareira brava, uva ursi, and triticum repens. They simply act as diluents. The balsams, however, are really useful. Of these, the balsam of copaiba is practically unavailable, because very few stomachs will tolerate it in sufficient doses.

Sandal-wood oil is of great service, and in Dr. Tyson's experience is the only remedy that has any direct effect on the mucous membrane of the bladder. It is usually well borne by the stomach, and is best administered in capsules containing ten minims. Eight capsules should be given each day—two before each meal and two at bed-time.

Boric acid and benzoic acid are both useful adjuvants to the treatment of chronic cystitis by reason of their antiseptic effect on the urine, each in five-grain doses, rapidly increased to ten. Resorcin may be used in the same doses, and naphthaline in doses of two grains.

The application of remedies to the bladder by injections may be considered in connection with a third indication—namely, the getting rid of the products of inflammation, the pus and mucus, and the compounds resulting from their decomposition.

This can only be done by washing out the bladder. Tepid water should be used first, and the injection made through a soft catheter. Four ounces may be thrown in at a time and then allowed to run out. This operation should be repeated until the water comes out clear.

After a few injections with plain water some medicament may be added. Dr. Tyson prefers salicylate of sodium in the proportion of a drachm to the pint. Boric acid, in the same proportion, is also very satisfactory. Alum may be used instead of salicylate of sodium when the pus does not diminish so rapidly as is desired. When there is a foul odor present, bichloride of mercury, in a very dilute solution, is of service. One should not begin with a solution stronger than 1 to 25,000; if this is well borne, the strength may be increased gradually.

Anodynes are indispensable in many cases to relieve the patient of extreme pain and the frequent desire to pass water. Opium and its alkaloids are the most efficient, and are best introduced by the rectum.

Dr. Tyson has been disappointed in the use of cocaine. Its only effect, when injected into the bladder, has been to produce some of the symptoms of cocaine poisoning.

If the prostate is much enlarged, the catheter must be used frequently, and often gives excellent results. The patient or his friends must be taught the use of the instrument and how to wash out the bladder. The catheter should always be cleansed with boiling water after its use, and then allowed to lie for a short time in a bichloride solution of 1 to 1,000.

Dr. Tyson does not believe that an absolute and total cure is ever obtained in chronic cystitis by the above-described treatment; but a life of suffering may be converted into one of comparative comfort, and he has more than once seen a life prolonged for six years in much comfort by careful attention to the bladder of the kind described.

The Gouty Diathesis in Women.—The *Journal de médecine* for February 10th calls attention to an article on this subject in the *Gazette hebdomadaire* by Dr. Baudon, of Nice. The author admits that acute attacks of gout are rare in women, but maintains that they are particularly subject to manifestations of the disease in a latent form. He refers especially to a group of nervous phenomena, having to do with the respiration and the circulation, to which he gives the name of gouty neurosis of the pneumogastric. The patients complain of a sense of suffocation, of palpitation, of intermittent and precipitate action of the heart, and of a feeling of great anxiety. One would be inclined to believe in the existence of some grave organic disease, but prolonged observation shows that the trouble is purely functional.

Dr. Baudon cites the case of a woman of forty-five years who was subject several times a month and at irregular intervals to periods of malaise, during which the heart beat tumultuously, causing a sensation of great dread in the patient. There was no angina pectoris, however, for there was no pain in the præcordia or in the region of the left shoulder. These attacks, especially frequent at the time of the menopause, afterward disappeared completely under treatment.

The author gives a large number of observations of the same general character, except that in some there were also gastric disturbances.

With regard to treatment, the preparations of colchicum seem to give good results, but the most efficient drug in all forms of the malady is iodine and its derivatives—the iodides of sodium and of potassium. It is well to begin treatment as soon as the nature of the trouble is suspected—at the moment of its first manifestation, and even before this, if there is a history of gout in the family.

"Post-expiration" Friction Sound.—In the *Lancet* for May 21st Dr. J. Wallace Anderson calls attention to a new stethoscopic physical sign which he calls "post-expiration" friction sound. He gives brief histories of two cases in which the sign was noted. The first case was one of simple pleurisy, with slight dullness at the base of the lung and a friction sound a little higher up. But, in addition to the usual friction sound, Dr. Anderson's attention was arrested by a peculiar short, jerky rub that succeeded each expiration—that is, it followed the completed expiration movement of the chest wall. The patient recovered, and all the signs of pleurisy gradually passed off.

In the second case the lung as well as the pleura was affected. The physical signs pointed to the existence of broncho-pneumonia as well as pleurisy. As in the first case, a post-expiration sound was heard, described as shuffling or rubbing in character. The patient died, and the sign was absent during the five days preceding death. A summary of the autopsy stated that there were emphysema, right pleurisy, left pleuro-pneumonia, and bronchitis. Dr. Anderson adds that the pleural surface of both lungs was covered with a more or less copious, recent fibrinous exudation. It should be stated that the physical sign in question had been heard on both sides in this case.

Seeking for an explanation of this peculiar form of friction sound, the author says that in the first case it seemed as if the one roughened pleural surface was caught and held by the other, and only set free with a sudden jerk when expiration was completed, or else that some further movement of the visceral pleural surface occurred after the costal expiratory movement had ceased. In the second case the roughening of the pleura was hardly such as would be likely to make the one surface actually catch on the other, though, as already stated, the post-expiration sound was not heard during the last five days of the patient's life. It is probable that in this case the movement of the lung surface after costal movement had ceased was the chief cause of the phenomenon. There is little doubt that both causes may be factors in the production of the sound. The elastic pulmonary tissue is always, to a certain extent, on the stretch, even at the end of expiration; it is always, so to speak, striving to pull the pulmonary from the parietal pleura.

Dr. Anderson is not inclined to attribute much importance to the emphysematous condition of the lung in the second case. The emphysema was confined to certain parts of the lung, whereas the friction sound was heard over the entire chest.

Acute Alcoholism.—Dr. T. S. Latimer, of Baltimore, read a paper on this subject at the recent meeting of the Association of American Physicians. The paper (*Medical Record*, June 4th) gave a brief history of 2,012 cases of alcoholism, of which 87 were maniacal. Most of the patients had been arrested for drunkenness or misconduct of some form due thereto. Some of them were addicted to the use of cocaine, chloroform, and other stimulants besides alcohol. They were a very unfortunate class of patients to treat, having been badly fed, badly clothed, badly housed, and often suffering from other diseases. Almost invariably they begged for drink, which, however, was invariably refused. None remained delirious longer than five days. By the second night they almost always could sleep well. Bromide of potassium was the only drug given except in a very few instances. The good result, however, was attributed not so much to the drug as simply to the withdrawal of alcohol, which was absolute and from the very beginning. The patients were subjected to no restraint further than confinement in their cells.

The author's conclusions were as follows: 1. The clinical phenomena attending the excessive use of alcohol are the direct result of the stimulant, and are not due to its abrupt withdrawal. 2. The desire for the stimulant almost uniformly persisted. 3. Alcohol in any form or quantity is unnecessary in the treatment of such cases, and is usually harmful. 4. Absolute and immediate withdrawal of alcohol is of the first importance in treating the symptoms due to its use. 5. Forced feeding is rarely necessary. 6. Placing the patient in any kind of bonds is unnecessary.

The Different Forms of Cardiac Pain.—At the same meeting Dr. Chew read an interesting paper with this title (*Medical News*, June 18th). He divided cardiac pain into three forms: First, true angina pectoris; second, the cardiac pain associated with Bright's disease of the kidneys; and third, the pain which occurred in dilatation of the heart.

The first form, angina pectoris, usually occurs in paroxysms. The structural changes connected with true angina are in a large proportion of cases those that produce cardiac ischæmia, especially insufficiency or atheromatous rigidity of the aorta, obstruction of the coronary arteries, or fatty degeneration of the heart. Any of these changes may lessen the blood supply to the heart-muscle, but only the first two—aortic insufficiency and obstruction—are diagnosticable with certainty by auscultation.

A common factor in the production of a paroxysm is a great and sudden increase of arterial tension. Whatever be the underlying cause, the immediate action seems to be purely neurotic. It is in this form that the nitrites are of great service, especially nitrite of amyl.

The second form of cardiac pain is encountered as a complication of some cases of chronic nephritis, chiefly the contracted kidney or interstitial nephritis. In this class of cases the changes in the kidneys and sometimes in the heart are parts of a general arterio-sclerosis, and the pain in the heart is probably the expression of resistance to the blood-flow through the arterioles.

It is in cases of this kind that iodide of potassium in large doses may sometimes prove beneficial by lessening the arterio-sclerosis. In the painful attacks a certain degree of relief may be obtained from the nitrite of amyl, which, though it can not reach the organic cause of obstruction, may lessen an incidental increase of tension.

A third form of cardiac pain is found in dilatation of the heart, and is perhaps due to tension and stretching of the nerves in the heart-substance. Pain may thus arise from any form of valvular disease of the heart that leads to dilatation. It is perhaps most commonly found in aortic insufficiency, which is likely to occasion rapid dilatation of the left ventricle, from the pressure of the backward current of blood from the aorta, at the same time that the left auricle is sending its supply into the ventricle. Aortic insufficiency may also give rise to some cardiac ischæmia by the imperfect filling of the coronaries, and thus there may be two causes of the pain—the ischæmia and the intraventricular pressure.

If dilatation is extreme and acutely developed, free venesection may be the best means not only for relieving pain, but also of saving life.

In all forms of cardiac pain, arsenic is a remedy of much value, from its action as an antineuralgic, and from its power of promoting the nutrition of the heart. It has no effect in the way of controlling existing pain, but it may lessen the severity and the frequency of future attacks.

Looking at all three of these forms of disease, it is quite possible that the chief factor in the production of pain common to all of them is pressure brought to bear upon the cardiac nerves or upon the cardiac ganglia themselves. The connection between these ganglia and the cervical and brachial plexuses gives a ready explanation of the extension of the pain to the anus that may occur in any form of cardiac pain. In the first or strictly paroxysmal form—true angina—the pressure may be occasioned by the sudden tension of the arterioles; in the second form, by the general sclerotic state of the vessels; and in the third form, with dilatation of the heart, by the attenuation of the heart walls.

Massage of the Chest in Pleurisy.—*Lyon médical* gives a short abstract of a paper on this subject by Polakow, originally published in *Vratch.* The author has employed massage of the chest in eleven cases of dry and sero-fibrinous pleurisy. In suppurative pleurisy the massage is contra-indicated. It is therefore necessary to make sure of the nature of the effusion by repeated exploratory punctures before proceeding to use massage. In all the eleven cases Polakow obtained complete absorption of the effusion. In four of the cases other therapeutic measures had been tried without effect; massage was instituted on the thirteenth, twentieth, twenty-second, and thirty-seventh days of the disease. In these cases absorption took place at the end of eleven, thirteen, fourteen, and sixteen days, and complete recovery (disappearance of all signs on the part of the pleura) at the end of thirty, thirty-three, twenty-four, and twenty-two days.

In the other cases massage was begun on the second day after entrance into the hospital. Absorption was accomplished after an interval varying from eight to twenty-six days, the stethoscopic signs disappearing at the end of from nine to thirty-five days. Pain was rapidly relieved under the influence of the massage.

Abarticular Rheumatism accompanied by Endocarditis and Subcutaneous Nodules.—Sir Dyce Duckworth discusses this subject in the March *Practitioner.* He first relates the following case: A pale but fairly nourished girl, seven years of age, was admitted into St. Bartholomew's Hospital, suffering from weakness and dyspnœa. The history indicated that she had had pains in the knees and legs four months previously, and afterward became short of breath. With the exception of measles at the age of three years, the child had had no illness whatever. The family record was excellent, with no history of rheumatism.

On admission, the temperature was 100° F., the respiration 55, the pulse 140 to the minute, of low tension. The tongue was moist and clean. The apex beat of the heart was felt in the sixth intercostal space, one inch outside the nipple line, with forcible impulse. The area of dullness began at the fourth left cartilage and extended inward to an inch to the right of the sternum. A double apex murmur was heard, conveyed to the left interscapular region. A few dry râles were heard over the lungs. Some hard nodules were found about the patellæ and on the elbows. The urine was of the specific gravity of 1·012 and contained a trace of albumin.

The treatment consisted in the use of acetate of ammonium, nux vomica, cinchona, and nitrous ether, and afterward digitalis. An ounce of brandy was given daily.

About a week after her admission the patient complained of sore throat, and, on examination, the tonsils and fauces were found covered in parts with a diphtheritic-looking exudation. The urine was loaded with lithates and showed a cloud of albumin. The child was at once isolated and treated for diphtheria, though there was no history of exposure. In spite of free stimulation, the patient gradually became weaker, with increasing dyspnœa. A pericardial friction sound developed. The throat cleared, but the urine became more albuminous, with œdema of the legs. There were also pains in the back and legs.

Death took place on the twenty-fifth day after admission into the hospital. At the autopsy much engorgement of the lungs was found. The pericardium was slightly roughened with a deposit of recent lymph. The heart was dilated, with thin walls. Fatty degeneration was evident on the papillary muscles and elsewhere. The mitral valve was softened and showed a few small vegetations at the free edges. The kidneys were healthy. Several firm nodules were removed from the neighborhood of the knee joints and elbows. They were in the integument and not specially attached to the periosteum. On microscopical examination, these nodules showed bundles of normal tendinous fibers with loose fibrous tissue between them, and in this tissue were many tortuous arteries and veins. Certain tracts were infiltrated with young, chiefly spindle-shaped, and a few round, connective-tissue cells. These new cells were mostly close around the blood-vessels.

The author says that the point of chief interest in this case is the occurrence of grave cardiac disease associated with subcutaneous nodules, and the absence of the ordinary articular rheumatic manifestations. Other cases of this kind have been reported and illustrate the important fact that rheumatism is a disorder of wide range, and not merely a disease of joints. The connection between subcutaneous nodules and valvular heart disease is shown in all these cases, and this strange conjunction should be borne in mind so that, given the presence of such nodules, a careful examination of the heart should always be made. The underlying element common to the nodules, the pericarditis, and the endocarditis is unquestionably true rheumatism. The occurrence of nodules in the integument at once suggests a similar proliferative inflammatory exudation on the cardiac valves, or in the pericardial sac, or in both structures.

With respect to the sore throat which occurred in his case, the author does not think it certain that it was diphtheritic in nature. The membrane did not spread. It may have been an example of follicular amygdalitis of rheumatic origin.

The treatment of such cases is that proper for rheumatism generally. Salicylate of sodium is hardly available, there being no great pain or pyrexia. Quinine, strychnine, iodide of potassium, and alkalies are of more use. Arsenic is of special value in combating the non-articular forms of rheumatic dyscrasia, and should be given persistently for weeks.

The prognosis is not good. The general level of nutrition is low, and the heart is apt to fail, responding but little to careful medication, suitable diet, and rest.

Disease of the Biliary Passages and Ulcerative Endocarditis.—Very few observers have called attention to disease of the biliary passages as a possible ætiological factor in ulcerative endocarditis.

Dr. J. Leva, in the *Deutsche medicinische Wochenschrift* for March 17th, gives a *résumé* of the scanty literature of the subject and describes in detail two cases observed by him in Professor Eichhorst's clinic, in which the ulcerative endocarditis seemed to be the consequence of the preceding cholelithiasis. In both cases there had been a history of repeated typical attacks of biliary colic. After admission to the hospital the signs of ulcerative endocarditis suddenly developed and the patient died a few days thereafter.

On autopsy, the ductus communis choledochus was found to contain numerous calculi, which had caused great dilatation of the duct. The larger biliary passages were also much dilated, but afforded no evidence of any inflammatory process. The heart showed a recent ulcerative endocarditis, in one case the tricuspid, in the other the mitral valve, being involved.

The author feels justified in assuming a close connection in these cases between the changes in the bile ducts and the inflammation of the cardiac valves, though he can give no direct proof of this connection. He believes that the micro-organisms found their way from the liver into the blood and were thus carried to the heart. He, unfortunately, made no bacteriological investigations in his cases. Netter and Martha, however, in a similar case referred to by the author, found the same bacillus in the contents of the bile ducts and in the vegetations on the cardiac valves, thus furnishing a strong, though not absolutely conclusive, proof of the identity of the two processes.

The ætiology of ulcerative endocarditis, as of other septic diseases, is often most obscure, and Dr. Leva has rendered a service in suggesting the possible dependence of these affections upon disease of the biliary passages.

The Use of Digitalis in Aortic Disease.—It is still very commonly held that digitalis should not be given in cases of aortic valve disease, or, if given, should be used with much greater caution than in mitral disease. Dr. Alfred G. Barrs, however, takes strong ground against this view in the *British Medical Journal* of March 12th. That which we have to treat in any given case of valvular disease, mitral or aortic, is the effect produced by that lesion upon the blood-pressure, and through it upon the capillary circulation; and that effect is always of the nature of failure of the circulation. In Dr. Barrs's opinion, there is no essential difference in the kind of failure in the two diseases or in the method by which the valvular lesion produces this failure. He has seen many cases of aortic disease in which, in spite of digitalis, the broken compensation could not be restored; but he has never seen any case in which there was any good reason to say that, though digitalis had failed, it had done harm. His records of the past two years show the attendance at the out-patient clinic of the Leeds Infirmary of twenty-four cases of uncomplicated double aortic disease, which were under treatment chiefly for breathlessness interfering with work. They all took continuously the tincture of digitalis in ten-drop doses, and all derived more or less benefit from it, some being able to follow laborious occupations while under its influence. In no case was any damage done by it.

Dr. Barrs says that during the last ten years it has been his invariable rule to treat all cases of valvular disease with symptoms in the same way—namely, with digitalis. He knows no other drug which is so sure to influence the heart. He has tried strophanthus, adonidine, sparteine, and the other suggested substitutes for digitalis, and has found them practically of little or no value compared with digitalis.

Dr. Barrs states his conclusions as follows:

1. In all cases of valvular disease the chief desideratum in regard to the heart itself is the condition of the cardiac chambers in respect to dilatation and hypertrophy.
2. The presence of symptoms in cardiac disease means always failure of compensation.
3. The condition described as over-hypertrophy or over-compensation does not exist.
4. The dangers in aortic disease arise from the same cause as the dangers in mitral disease—namely, failure of the compensation, that is, failure of the ventricular muscle to overcome the ever-increasing work put upon it.
5. If digitalis is safe and beneficial in mitral disease, it is equally so in aortic disease.

The Abortive Treatment of Pneumonia by Large Doses of Digitalis.—During the past nine years Professor Petresco, of Bucharest, has relied entirely upon digitalis in the treatment of pneumonia. About a year ago he published the results obtained by him in five hundred and seventy-seven cases.

In the *Bulletin général de thérapeutique* for February 15th he reports one hundred and seventy-eight additional cases. He states that he always uses a strong infusion of the leaves of the plant, from one to three drachms of the leaves being infused in eight ounces of water and simple syrup. Of this mixture a tablespoonful is given every hour during the day. In this way some of his patients took as much as one hundred and twenty grains of the leaves of digitalis in twenty-four hours.

The author alleges that these large doses abort the pulmonary process, as a rule, within three days. The fever and all the physical signs, both local and general, disappear as if by magic. A temperature registering 105° at the beginning of the illness drops to 96° or even 95°, and the pulse falls from 120 to 35 or 30 pulsations a minute. Not only was the duration of the disease shortened, but also the period of convalescence. All the author's patients found themselves in a state of perfect health within twenty-four hours after the "jugulation" of the pulmonary process. They could therefore at once take up their ordinary occupations.

The mortality of the disease was reduced to 1·22 per cent., and Dr. Petresco believes that it could be reduced to nothing if the digitalis were given in the doses mentioned in the very beginning of the pneumonia.

In not a single case were any phenomena of intoxication noticed. The more intense and grave the pulmonic process, the better were large doses, frequently repeated, borne by the patient.

In explanation of the favorable effect of digitalis in pneumonia, Dr. Petresco calls attention to the physiological action of the drug.

Digitalis stimulates the pneumogastric nerve, and the nerve in turn increases the contractile energy of the heart. The increased action of the heart forces on the blood current, and consequently prevents stasis of the blood if it has not yet occurred, and combats it if it has already taken place. Thus, even admitting the parasitic infectious nature of pneumonia, its treatment by digitalis, far from being contra-indicated, fulfills a pathogenic indication.

Digitalis is, however, not only a stimulator of the pneumogastric, but is also a vaso-constrictor. It therefore produces a current of flux and reflux of the blood, from the heart to the pulmonary capillaries and from the capillaries to the heart, thus preventing the congestion of the first stage and aiding the resolution and absorption of the exudation in the second stage of pneumonia.

The author insists that this double action of digitalis must be produced as quickly and as energetically as possible. This object is only attained by giving large doses from the beginning of the disease, instead of waiting for the cumulative action of the drug.

His principal conclusions are as follows:

1. Pneumonia can be aborted by digitalis in large doses given from the commencement of the malady.
2. This abortive treatment is the most rational, for it is based upon the pathogenic indication of pneumonia.
3. The value of this treatment is confirmed by the large number of cases already reported; the smallest mortality is observed in pneumonia treated in this manner.
4. The dose of sixty to one hundred and twenty grains a day of the leaves of digitalis in infusion is the proper therapeutic dose of digitalis in the pneumonia of adults; it is only from a dose of this amount that we have a right to expect immediate curative effects.
5. The tolerance and absence of toxicity of this therapeutic dose are proved incontestably by the statistics of the author referred to above.

The Pancreas and Diabetes.—Professor Seegen, the well-known authority upon diabetes, recently read a paper upon the above subject before the Medical Society of Vienna. Special reference was made to the view of Lépine that the pancreas produces a glycolytic ferment, the lack of which causes an accumulation of sugar in the blood.

Professor Seegen (*Lancet*, June 18th) holds that, granting that the blood of a diabetic patient has less glycolytic action than that of a healthy subject, it is assuming a great deal to say that this proves the presence in health of a special glycolytic ferment manufactured by the pancreas. By careful experiments, he finds that the normal sugar disappears most rapidly from freshly drawn blood when the latter is maintained at a high temperature (39° C.), while a current of air is being passed through it. This can not be due to the action of living protoplasm, as is shown by the addition of chloroform (to kill the protoplasm), which makes hardly any difference in the glycolytic action. The glycolysis goes on more actively after the blood has been drawn for some time than at first, hence Professor Seegen infers that the ferment is produced by some change in the blood outside the body rather than by the pancreas. He suggests that diabetic blood may contain something antagonistic to glycolysis, so that even if Lépine's experiments are correct, they do not necessarily point to a diminution of the ferment in that disease. He holds, therefore, that the explanation of "pancreatic diabetes" has still to be found.

Pathological anatomy has shown that in cases of diabetes the pancreas may be quite normal. Professor Seegen, therefore, in closing, agrees that in diabetes there is diminished glycolytic action in the body; but he denies that Lépine has proved this to be due to disease of the pancreas causing a diminished production of a hypothetical ferment.

Miscellany.

The Constitutional Treatment of Diseases of the Skin.—In an article with this title, published in the *Australian Medical Journal* for May, 1892, by Mr. Alexander Lewers, the author remarks that within the last few years the local treatment of skin diseases has received an extraordinary amount of attention from specialists, and manufacturing chemists have been kept busy devising new combinations of ancient and modern formulæ. To Unna, of Hamburg, in particular, the profession is indebted for a number of elegant applications in the form of plaster-mulls, salve-sticks, pencils, and pastes, and the skin specialist of to-day possesses pharmaceutical paraphernalia undreamt of by his predecessors. Unquestionably, great advances have been made in this direction, but it seems that so strong a light is being cast upon the local treatment as to throw the general treatment unduly into the shade, and thus endanger the elucidation of the degree of dependence of affections of the skin on impairment of the general health. The skin has its own functions in the organism as a whole, a fact that we seem somewhat to be losing sight of in the multiplication of purely local forms of treatment in its diseases.

Not very long since all skin eruptions were looked upon as evidences of impurities in the blood, an idea not yet eradicated from the lay mind. With the discovery of the animal and vegetable parasites, and the strong modern bias for a bacillus, opinion rapidly veered to the other extreme, until local treatment has become a matter of more interest to the specialist than causation, and the multiplication of topical remedies is more worked at than the conditions that underlie the disease. Undoubtedly, this reaction has been of advantage to both patient and practitioner, but it is well to pause now and again to look over the old ground.

Take, for example, says the author, the most common and not the least troublesome of all skin affections—the ubiquitous eczema. This, as is now well known, may be a purely local manifestation, dependent on a variety of irritant causes—*e. g.*, the numerous trade eczemas and those produced by undue heat, as seen in cooks and stokers. Here a purely local treatment is usually all that is required. Under the old *régime* the unfortunate patient was purged, and physicked, and even bled, whereas now constitutional treatment is usually altogether dispensed with. Yet it is always well even here to be on the lookout for trifling departures from the normal standard of health—particularly with regard to the state of the bowels and the customary diet. As to what may be called the constitutional causes of eczema, we must confess that but little light has been thrown on the subject up to the present time. The successful treatment of an eczema from which local causes have been eliminated calls for as thorough a knowledge of the principles of medicine and as keen an observation as any disease the physician meets with.

On what does it depend? How shall we proceed? The answers, it must be admitted, are only moderately satisfying. The French suggestion of the dartrous diathesis, though supported by Jonathan Hutchinson, has never met with general acceptance, and heredity seems a *quantité négligeable* in eczema. Gout has been dilated upon as a cause of eczema, but it certainly seems to have been unduly overrated. Gout is very uncommon in Australia, and yet, according to the author, eczema is overwhelmingly the most common skin affection met with there. In no case of eczema seen there has he ever been able to elicit a history of personal or ancestral gout. Disorders of digestion seem decidedly to have a considerable place as causes not only of eczema, but of other skin affections. How this is so is still a matter of opinion, though Crocker's idea of a reflex nervous disturbance, inducing capillary dilatation, appears most plausible, particularly when we remember the close connection between urticaria and articles of diet.

That the nervous system is sometimes implicated in the causation of skin affections is apparently established, though how far it is primarily so is very uncertain. Eczema and other eruptions are common during pregnancy and lactation, and occasionally are connected with the menstrual function. These are all times at which the nervous system is, so to speak, at high tension; but it may merely be that at these times it reacts more readily to reflex irritation from the alimentary canal. McGillivray records a case of urticaria following rupture of an abdominal hydatid, and Fagge mentions one after electrolysis of an abdominal hydatid. Here the irritation was obviously reflex. The various trophoneuroses are of absorbing interest; but, so far as we know at present, the relation between a given nervous lesion and a resultant skin manifestation is so varying and uncertain that no definite statements are possible.

The point for consideration is whether we are not too prone to look on every new skin affection as a separate entity, when in reality our main efforts should be directed to some defect in the general working of the organism.

Vague as the indications are, there are nevertheless several broad lines to be followed in all diseases of the skin requiring constitutional treatment:

(*a*) *Drugs.*—Ask ten men to prescribe for a skin disease, says the author, and six of them will promptly write arsenic. Arsenic is no more a specific for skin eruptions than for broken legs. In his experience, it is of no service whatever in eczema, and, as its irritant effects are very marked in some cases, it does positive harm. In psoriasis, arsenic is rarely required. Psoriasis appears to be an affection of health (if such a term may be allowed) and, moreover, often of robust health. He has seen a case of impetigo contagiosa in a child carefully treated for weeks with arsenic and iron, which disappeared in a few days with a local application of a mild antiparasitic. Arsenic is undoubtedly an invaluable drug in many skin affections, notably pemphigus, and perhaps lichen ruber. Still, he who sows it broadcast will be woefully disappointed at his harvest of result. The first great point for attention in all skin diseases, and especially in eczema, is the state of the alimentary canal. Constipation will generally be found, and is best met with saline purges in the acute affections; while, if the condition is chronic, combinations of nux vomica, belladonna, and cascara sagrada are best; alkalies and bitters if there is dyspepsia; bismuth and coca if there is much gastric pain. In children and infants diarrhœa is often present, intestinal catarrh being common, and must receive attention. After the correction of digestive disorder, children frequently, and adults occasionally, require tonics. Intestinal worms must always be borne in mind in treating skin affections in children. Teething as an ætiological factor may be disregarded, anxious mothers notwithstanding. Malcom Morris recommends antimonial wine strongly in eczema, but here again there is no specific action. It undoubtedly is of service in some cases, chiefly acute attacks in plethoric subjects, but the indications for its employment are not at all general, and it has been more successful in Morris's hands than in those of most other observers, possibly as a result of that intuitive perception in selecting cases which no man can communicate to his fellows.

A drug that seems of signal service in erythema multiforme is salicylate of sodium, and the connection between this affection and rheumatism is one that offers an interesting field of work.

The well-known and recognized alternative eliminative function of the skin and kidneys may be made use of in the treatment of diseases of the former. Diuretics are of use oftener in chronic than in acute inflammations. The urine should be examined in every case as a matter of routine, and every endeavor made to bring and keep the kidneys to a normal standard. In acute inflammations in plethoric subjects a diuretic mixture is often of signal service at the outset.

(*b*) *Diet* in skin affections is a point too often neglected. It is a difficult matter to lay down any hard and fast rules, since the digestive powers vary so greatly with the individual and with the same individual at different times. It is not usually well to inflict any penitential dietary, but to vary it as far as possible with certain restrictions. Spices and condiments are to be avoided. Oatmeal and brown bread are not suitable. All shell fish, not excluding oysters, and preserved provisions of all kinds, are bad. Salt meat is less digestible than fresh, and therefore to be avoided. Sugar should be used sparingly. In young infants, starchy foods are usually difficult of digestion. Alcohol is to be deprecated, though it need not be absolutely withheld.

(*c*) The *hygiene* of skin diseases is a point that must also receive attention. Patients suffering in this manner are always extremely excited and anxious about themselves and apt to shut themselves up on account of fancied or real disfigurement. Thus is readily brought about a condition of mental unrest which, added to the torture of intolerable itching and discomfort, speedily reduces the patient to a most unfavorable condition for rapid recovery, and occasionally upsets the mental balance entirely. We should see that, so far as is possible, the patient has cheerful surroundings; that his mind is kept occupied by congenial pursuits that will prevent his brooding over his disease or altered appearance. Where possible, outdoor amusement and gentle exercise should be obtained. The question of climate is one that has usually to be decided upon in each individual case. Speaking generally, a dry, equable climate is suitable for most skin affections. Cold winds and hot sunshine are bad, and the seaside suits some people, while others are unable to remain near it. Sea air is more irritating than inland air, and lupus, in particular, is a disease that seems constantly aggravated by proximity to the sea.

It is to be distinctly understood that local treatment is not in any degree undervalued or disparaged. The local treatment is to be carried on unremittingly during, and in a great number of cases after, the course of constitutional measures. For it is never to be forgotten that any part of the organism readily acquires a bad habit which may persist long after the withdrawal of the original stimulus. Take as an instance the squint or facial twitching which a child will learn from a nurse or relative so affected. The skin is no exception to the rule, and we must persevere with local remedies long after we can see no lines on which to base a course of internal treatment. It is an interesting point for speculation as to whether we can not explain the recurrence of some skin diseases in this way at times.

The United States Marine-Hospital Service.—The *Lancet* says: We have received a copy of the annual report of the Supervising Surgeon-General of the Marine-Hospital Service for the United States for the fiscal year 1891. On account of the number of applications, and because of the necessity of maintaining the professional excellence of the medical corps, it is stated that the standard to be attained on examination for admission into this service has been placed at 80 per cent., while the physical examination is also exacting. The medical corps of the service now consists of the supervising surgeon-general, fifteen surgeons, twenty passed assistant surgeons, eighteen assistant surgeons, and seventy-nine acting assistant surgeons. The force of medical officers in the bureau at Washington as assistants to the Surgeon-General consists of one surgeon in charge of the quarantine division, one in charge of the purveying division, one passed assistant Surgeon in charge of the laboratory of the service, and another as bureau executive and acting chief clerk. During the year ending June 30, 1891, the total number of patients treated by the service was 52,992, of which number 15,349 were treated in the hospitals and 37,643 in the dispensaries connected therewith. There are eighteen United States marine hospitals, not including the quarantine hospitals belonging to the service, and one hospital at the port of New York occupied under lease, the purchase of which by the Government is recommended. The Supervising Surgeon-General's report embraces a good deal of information arranged under the heads of public health division, purveying division, and those of quarantine service, inspection service, immigration, laboratories, sanitary reports, and statistics, with a number of special papers, medical and surgical, and reports of fatal cases, with necropsies. Many of the papers are distinctly interesting, such, for example, as Studies in Service Statistics dealing with Diseases of the Circulatory System and the Frequency of Heart Clot; Ten Years' Personal Experience of Enteric Fever; and Influenza or "Grippe," together with other papers and clinical reports of cases too numerous to mention.

Sulphur in Chlorosis.—In the June number of the *Practitioner* we find an abstract of a paper by Professor Schulz, published in the *Berliner klinische Wochenschrift*, No. 13, 1892, in which he again draws attention to the value of sulphur in certain cases of anæmia. After alluding to the prominent part played by sulphur in the life of the cell—a part analogous to that of hæmoglobin in the blood—and to the excellent results obtained by the use of sulphur waters in malarial cachexia, he comes to these conclusions: (1) In cases of pure chlorosis in which iron proves inefficient, the general condition is decidedly improved by sulphur; (2) after the administration of sulphur has gone on for some time, treatment with iron can be commenced and continued with success; (3) in cases of chlorosis complicated with catarrhal and inflammatory conditions of the digestive tract, sulphur is not borne. Schulz relates a case illustrating the advantage of the sulphur treatment. The patient, a woman, thirty-four years of age, showed an extreme degree of anæmia, and had loud cardiac bruits. She complained of headache, giddiness, shortness of breath, palpitation, and complete loss of appetite, with pain in the epigastrium after food. Rest in bed with bland fluid diet was ordered, and this—with bismuth and morphine and occasional doses of Carlsbad salt—relieved the gastric pain. Iron was tried in the form of the saccharated carbonate, but vomiting immediately set in, and its use had to be discontinued. Other preparations of iron were tried with no better result. Sulphur was accordingly given, and this she bore very well. Great improvement ensued: the anæmic appearance lessened, and the headaches and palpitation disappeared. She was discharged from hospital greatly bettered; but she still complained of some palpitation on considerable exertion. Iron was again given as the saccharated carbonate, and this time was tolerated without difficulty. The sulphur was used in the form of flowers of sulphur mixed with sugar of milk, as much being taken three times a day as would lie on the point of a knife.

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Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

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All communications intended for the editor should be addressed to him in care of the publishers.

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Original Communications.

A CLINICAL STUDY OF

INTESTINAL INDIGESTION.

By W. W. VAN VALZAH, A. M., M. D.,
NEW YORK.

In the clinical study of the disorders of digestion the stomach can not be considered the most important division of the alimentary canal. In the light of modern research this position must be assigned to the small intestine, and chiefly to its upper part. It is in the duodenum, and in the duodenum only, that a mixed diet can be perfectly prepared for absorption. The work begun in the kitchen and continued in the mouth and stomach reaches the climax of chemical changes at this point. The preceding stages of digestion have been preparatory and progressive.

Duty and responsibility go hand in hand. When the duodenum with its two great appended glands was supposed to play a subordinate and supplementary part, not much attention was given to the intestine in the disorders of digestion, and the logical sequence was failure in treatment. The stomach has been much abused by laymen, and a physician of genius has seen in it the origin and source of every form of chronic disease. No other organ has been so maligned and maltreated. It is now time that the responsibility should rest where it belongs, and much of the blame must be transferred to the intestine. Vicarious suffering is not a principle of law, or of Nature, or of disease.

The stomach is an antiseptic receptacle which doles out its contents to the duodenum in a soft, semifluid, mixed, and slightly changed form. Its secretion, as does the saliva, only acts on one class of foods and in a very incomplete manner. No very great quantity of nitrogenized food is converted by hydration into peptones, and the precipitated casein, proteoses, liberated granulose, and fat are discharged into the duodenum. But be it understood that it is not our purpose to underestimate the utility of the work done by the stomach. There is much reason for believing that it would be disastrous to have all of the proteids and albuminoids converted into trypsin peptone, which is essentially a decomposition or erosion product and one form of which is utilizable only in the production of energy and animal heat. Gastric peptones can be readily converted by anhydration into serum-albumin and are available for tissue-building. Pure peptones suffice to keep up nutrition (Maly, Adamkiewicz). Moreover, unchanged albumin introduced into the rectum is absorbed and can maintain nutrition (Ewald and Eichhorst), and proteoses are even more readily drawn into the circulation. Incomplete peptonization can not, therefore, be admitted as an argument against the usefulness of the work of the stomach in digestion. Careful alimentation can maintain nutrition in the dog and in man without the intervention of a stomach. This proves that the work of the stomach is not essential and can be delegated in certain favorable conditions to the duodenum. It detracts not one iota from its value, and the richness of resource results from the development in duplicate and the multiple relation of function to structure in the evolution of the digestive system. The stomach also does important police duty in destroying pathogenic bacteria, and ejecting indigestible, irritating, and poisonous substances. The cardia and pylorus open and close opposedly. The eyelid, by a beautiful provision of Nature, protects the organ of sight. The muscular pylorus holds the door to the intestine. But the chemical work of the stomach is not all-important, and this pouch is simply an antiseptic, protecting, distributing, and chiefly preparatory receptacle.

The intestine is a digesting, absorbing, and eliminating tube. Our study is restricted to the disorders of digestion, and absorption and elimination can only receive consideration as causative factors. Elimination may disorder the digestive process by altering the chemical reaction of the intestinal contents or by originating a diarrhœa. If the intestinal epithelium loses its selective power, auto-infection, with its pernicious influence on the system and on digestion, may result. An excess of the diffusible products of digestion interferes with the further action of the ferments, and deficient absorption predisposes to superdigestion and organic putrefaction and fermentation.

The part that the secretion of Brunner's glands plays in the conversion of the food into a liquid and diffusible product is not well known. This juice liquefies proteids and albuminoids, acts vigorously on a ptyalin product, maltose, and probably also on cane sugar, and by its intense alkalinity aids in the neutralization of the gastric juice. Its defective secretion may add to the work that must be done lower down in the alimentary canal, and we would naturally ascribe to its absence a predisposition to the simple duodenal ulcer.

Incomplete also is our knowledge of the enteric juice. Cane sugar is chiefly prepared by its invertin, and its alkaline carbonate is essential to the maintenance of the proper reaction of the contents of the jejunum and ileum. Without it the pancreatic ferments would soon be rendered inactive by organic fermentation and putrefaction, although normally no bacterial decomposition of proteids and albuminoids should take place in this part of the alimentary canal, and indol and phenol and scatol and marsh gas and hydrosulphuric acid should never be formed here in health. The gastric hydrochloric acid should be neutralized in the duodenum, and consequently the intestinal contents are nearly neutral in the jejunum but always faintly acid in the ileum. It is the organic acids that the enteric juice is called upon to neutralize, and the maintenance of a proper chemical reaction has a good deal to do with the prevention and limitation of bacterial growth.

The diastatic ferment of the bile acts feebly on carbohydrates and the bile salts throw down the proteoses in the form of a flocculent precipitate. The digestion of a natural emulsion of fat (cream) is perfect in the absence of the pancreatic juice (Dastre), and about ninety per cent. of it is absorbed (Mering, Minkowski), but not so in the absence of bile. Without bile neutral fats are not emulsified, and organic decomposition is less when bile is present. Its antiseptic properties are very feeble (though it seems not to be a very good food for bacteria), and it exerts its favorable influence by promoting pancreatic digestion, absorption, and peristalsis. The liver is of greatest use in metabolism.

The pancreatic juice puts the crown on the chemical process of digestion, and its work gradually loses itself in organic decomposition. It prepares no way, is regal in its advancement, but its rule is limited by precedent and hedged about with chemical and vital law. It is with this code that we are chiefly concerned.

Perfect duodenal digestion requires (*a*) a medium of proper reaction, (*b*) normal secretion, (*c*) a proportionate quantity of digestible food in a proper physical condition, and (*d*) the normal movements of the food mass.

It may be supposed that the best reaction for the food mass to possess is the one which is most favorable to the action of the digestive ferments—the trypsin, amylopsin, steapsin, and milk-curdling ferment. In perfect health this is probably true; in disordered assimilation rapid digestion and rapid absorption may both be undesirable. But our study is limited to disordered digestion, and it is our purpose to consider the changes in the environment and in the conditions which disturb and delay the process. It is well known that the pancreatic ferments are most active in a slightly alkaline medium. The essential condition is complete neutralization of the hydrochloric acid. In the presence of bile a feeble acidity due to organic acids does not inhibit but probably increases their activity (Lindenberg). The chemical equilibrium may be destroyed by a too acid chyme, by a deficiency of the duodenal secretions, by excessive organic fermentation, and by too little enteric juice. The excess of acid may be taken in the food, or it may be developed by organic fermentation or fat-splitting in the stomach, or it may be the result of excessive secretion of hydrochloric acid when the pancreatic ferments are not only rendered inactive but are also destroyed.

Duodenal dyspepsia from defective secretion is a frequent disorder. There may be too little pancreatic juice, or too little bile, or there may be too much bile of a bad quality, producing excessive peristalsis. Normal chyme is probably the best stimulant of duodenal secretion. There is the same orderly sequence in secretion as in the digestive process. Through nervous association salivary is followed by gastric secretion, and then the duodenum and its appended glands are aroused to action. The alkaline saliva promotes the secretion of the acid gastric juice, which in its turn puts the duodenum to work.

Duodenal acidity and faulty secretion are not the only disturbing factors. But the chemical process in the intestine may be disordered by an improper composition, or faulty preparation, or excess of the chyme. Gluttony is a frequent cause. An excess of proteids or of carbohydrates or of fats is no less pernicious in its ultimate effects. Either form of excess throws too much work on the duodenum, which will inevitably become inadequate. Not only is the influence direct, but indirect also through defective preparation by the mouth and stomach. The result, however, brought about is a chyme abnormal in quantity or quality.

The intestinal wall contains two sets of muscular fibers which are often dissociated in their action—the one regulates the caliber of the gut, the other the movements of its contents. Peristalsis and tonicity often act in unison, but just as often apart from each other. Hot water increases peristalsis (Ricord) but diminishes tonicity; cold water increases tonicity and may or may not influence peristalsis. The dilated stomach spasmodically empties itself, and the same is also true of the dilated colon. The investigations of Glénard show very plainly that hypertonicity and inadequate peristalsis coexist in enteroptosis. The habitually relaxed pylorus often allows the food to be hurried into the duodenum. Neurasthenics often have flat bellies, cord-like intestines, and constipation. And it is important clinically to remember that these two kinds of muscular action may be variously combined and localized, and restricted to divers parts of the digestive tube. Hypertonicity disorders digestion by diminishing the area of absorption and interfering with the circulation of the blood. The food-mass is not churned and brought into ever-varying contact with the mucosa. Insufficient and irregular and excessive peristalsis delays and disorders and decreases digestion and absorption. Atonicity permits stasis. Perfect digestion requires normal chemical and muscular action. The physical factor is no less essential than the chemical one. The recent brilliant discoveries in the chemical process have drawn our eyes away from the muscular layer. Unhealthy variations in intestinal tonicity and peristalsis are probably more pernicious in their influence than defective duodenal secretion.

From these proximate causes turn we now to the consideration of the remote ones. Digestion is disordered by every disease which is not purely local in its nature and effects. And our knowledge would naturally lead us to expect this, since perfect digestion requires, in addition to a right quantity of healthy food, normal nerve centers, a normal supply of pure blood, normal secretory and absorbing cells, and normal tonicity and peristalsis. These conditions are incompatible with every disease which is not strictly local and which involves a part that is not a component of the digestive system, be that disease discoverable with the microscope in the destruction, arrangement, or production of cells, or hidden under the word "functional" in intracellular change. The neuroses, denutrition, alcoholism, anæmia, chlorosis, malaria, and other forms of toxæmia, organic disease of the hæmatopoietic, or metabolic, respiratory, elimination, circulatory, or nervous systems, or of the digestive tube and its appended glands, may be the ætiological factors. To enumerate the remote causes of intestinal dyspepsia would be to pass in review the entire number of chronic disorders and diseases capable of disturbing one or more of the conditions of perfect digestion. If we carefully consider the clinical history, the subjective symptoms, and their order of development, the physical signs, and the result of the chemical and microscopical examination of the blood, secretions, and excretions, we will commonly be able to adopt a rational supplementary treatment directed against the remote cause.

The symptoms of intestinal dyspepsia are constitutional and local; the two symptom groups are born and develop and live and decline and fall together. We are well aware that we are now treading on disputed territory; the battle yet rages fiercely and the existence of neurasthenia and this great class of dyspepsias are staked on the issue. Specialism has joined the fray, and the war is to the knife. Are these symptoms, including those that are localized in the digestive tube, due to neurasthenia, to a functional nervous state without anatomical change (Beard), or to hyponutrition of the nervous system (Arndt), or to a general neuropathy affecting alike the digestive tube with all organs (Charcot), or to dilatation of the stomach with auto-intoxication sequential to chronic gastritis (Leube), or to weakness and relaxation of the muscular layer (Bouchard), or to dilatation of the ascending (Bouveret) or descending (Trastour) colon, or to enteroptosis (Glénard)? These questions can best be answered at the bedside by the general practitioner. His is the eagle eye that sweeps the whole field in a flash and takes in every detail. The vision of specialism is all the more intense because of its exclusiveness, but on broad questions is very apt to be wrong because perfect truth comes full circle. It seems probable that the neurologist and specialist in the disease of the digestive system, though diametrically opposed, are walking in the same beaten pathway, in the same vicious circle which was long ago established when nutrition, circulation, and the nervous system were linked together in the one law of being. It may be the nervous system that is robbed of its food and rest, and brought to a premature fall by hard hunger and an overreaching ambition—it matters not whether the force be scattered in the shock of the lightning flash or slowly wasted beneath some burning ray. The result is the same—a nervous wreck more or less complete. The beginning may have been small—a slight malaise. The end is complete prostration. And associated with the gradual decline or the rapid fall are divers disorders of the digestive process. Neurasthenia is one of the grand causes of gastric and intestinal dyspepsia, and affects primarily and chiefly the neuromuscular factor, the physical process. Associated with it there may be normal secretion (or even hyperchlorhydria) or deficient secretion. There may be hypertonicity with a small stomach and cord-like intestine, or there may be flaccid dilatation. But there is essentially and primarily diminished peristalsis and constipation, and sometimes complete stasis. Now, it is the digestive system that first fails, and the primary disorder is in the chemical process, as is usually the case also when there is "somewhat wrong with the blood." Neurasthenia is an entity; so is intestinal indigestion. The one may cause the other. Each may exist alone. Both may result from a common cause. Both are parts of the same circle, which often becomes a vicious one. What, then, are the symptoms of intestinal dyspepsia and on what can its diagnosis be based with certainty?

Habitual malaise and general debility are the two earliest and most persistent symptoms. A little work easily tires; sleep does not refresh; the mind is uncontrollable, wandering, flighty. The thinker can not concentrate his attention; thought loses both in intensity and extension. The broad view and firm grasp require a supreme effort which leaves relaxation and exhaustion. The philosopher becomes gloomy and apathetic or pessimistic and crabbed. The preacher grows ascetic and the brightness of hope is replaced by the gloom of despondency. The poet loses some of the sweetness and clearness and continuity of his song. The artist fails in conception and trembles in execution. The musician turns from his instrument—can not rest, can not compose. The statesman becomes sour and oppressive and defiant. The merchant is swallowed up in competition. Poet and plowman, priest and philosopher, one and all, lose energy, pertinacity, strength, and happiness because the intestine does not do its work well, and the liver gets clogged and the blood contaminated, and the nerves irritable and tired and without reserved store of force. Probably neurasthenic first, dyspeptic afterward—the vicious circle is established, and neither rest nor diet alone but combined will cure. The malaise is worse a few hours after meals; the general debility is most felt after a little forced work; both are usually at their height about the middle of the afternoon. Habitual malaise and general debility begin and rise and decline and fall with the disorder of digestion.

Insomnia, in many cases, is a most obstinate symptom, and most frequent in the early morning hours. Alcoholic drinks aggravate it, and the only hypnotic that will give refreshing sleep is a clean digestive tube.

Sensory disturbances are frequent. Neuralgia, hyperæsthesia, paræsthesia, anæsthesia, even lancinating pains, like those of locomotor ataxia, are not rare. These symptoms bear no definite marks, and are mentioned only on account of their association with and proportionate relation to the degree of the digestive disorder.

The heart symptoms are reflex or mechanical or due to auto-infection. Tachycardia, which may be paroxysmal, is not rare. The heart-muscle is nearly always weak, and the peripheral circulation poor. Vertigo from cerebral anæmia or auto-intoxication is only too common. Palpitation seems to be about as often found as in gastric dyspepsia. But the chief cardiac sign is the condition or behavior of the right ventricle. Flatulency, especially in the transverse colon, interferes with the action or filling of this ventricle, and the heart is pushed up and laboring or rapid, the respirations are quick and shallow, the pulse small and compressible, and the veins are full. The dyspnœa may be increased by the clogging of the liver, auto-infection, and contraction of the pulmonary arterioles. The symptoms may be intermittent or remittent or paroxysmal, accordingly as may be the strength and adequacy of the right ventricular wall. The heart may be not only inadequate but also irregular. The diagnosis of dilatation of the right ventricle is not difficult, and the therapeutic test of the relation of the cardiac trouble to the disorder of digestion is conclusive. Treatment directed to the heart alone fails. Digitalis and drugs of a similar nature do harm. Strychnine and nitroglycerin aid, but alone are inefficient or useless; but, combined with rest and a diet to control flatulency and to cure the intestinal dyspepsia, will sometimes restore the equilibrium even when the heart is near the stage of asystole.

Distress and pain and tenderness are among the *local* symptoms, but can not be considered as pathognomonic. The central figure on the canvas does not make the complete picture, and it gets a good deal of its meaning from its relations and associations: two peasants standing with heads bowed in devotion may not attract more than a passing recognition, but the dropped work, characteristic scenery, and sound of the distant church bells wake into expression a grand and touching historical truth. It is not on any one sign, but on the symptom group, that our diagnosis must rest. Very little meaning can be attached to the time of appearance of these symptoms. Their location should be considered. But the most valuable sign is a bruised and heavy feeling in the belly during the restless hours of the early morning.

Persistent flatulency in the small intestine is an almost pathognomonic sign of intestinal dyspepsia. It is greatest when organic putrefaction and fermentation are most active, and this usually occurs two or three hours after a meal. It is by no means rare to have gas diffused from the blood into the intestine, but this occurs irregularly and intermittently, and chiefly when the intestine is empty, and is not related to the quality of the diet. When poured into the duodenum from the stomach the clinical history and physical signs will suggest its source, and the urine and stools will contain nothing indicative of intestinal indigestion and decomposition.

Dilatation and displacement of the intestine is a physical condition and sign of some value. It may be due to either distention or relaxation; uneven tonicity, especially when combined with localized atonicity, may produce stasis of the intestinal contents; deficient peristalsis and chemical and bacterial decomposition mechanically distend. The flexures of the colon finally are displaced and fall from lax ligaments and a flaccid abdominal wall. This condition develops *par excellence* in the neuromuscular form of dyspepsia.

Constipation and irregular stools vary with the quantity of the bile, the chemical and physical qualities of the intestinal contents, and the disorder of the muscular layer. Organic acids, scatol, carbonic acid, hydrosulphuric acid, and marsh gas excite peristalsis; nitrogen, hydrogen, indol, and phenol have no influence (Bokai).

The urine is more or less characteristic. Indol is formed by the decomposition of tyrosine, a product of trypsin superdigestion, and by the bacterial decomposition of nitrogenous compounds, and it appears in the urine as indican. This process normally never occurs in the small intestine; and a urine containing an excess of urates, occasionally a few crystals of uric acid, of specific gravity about 1·020, a trace of bile, and indican in excess, is almost pathognomonic of intestinal indigestion, if the large bowel has been previously washed out. The deficiency of acid in the urine gives some idea of the amount of HCl secreted (Ewald), provided the increased alkalinity of the urine is not due to the absorption of alkalies from the food (Roberts), or to loss of HCl by vomiting, or to delayed absorption after secretion, or to the formation of insoluble chlorides (Jones and Quincke). This is a more trustworthy index if the neutral or feebly acid urine precipitates the earthy phosphates on boiling. The alkaline secretions diminish the alkalinity of the blood and increase the acidity of the urine (Hübner, Sticker, Jones, and Quincke). An excessively acid urine of normal or high specific gravity, and which, after standing forty-eight hours, only deposits, it may be, a few crystals of uric acid or oxalate of lime, is produced in this way. In hyperchlorhydria the abstraction of acid is followed by the withdrawal of alkali in excess to neutralize it, and the reaction of the urine is unchanged or vacillates. Excessive organic fermentation and consequent excessive secretion of the alkaline intestinal juice are the conditions underlying the formation of the clear, highly colored, excessively acid urine which very much delays deposition.

The stools are often characteristic from the fermentation and putrefaction to which they testify, or from the excess of unutilized starch and fat which they contain.

The diet test is the sure proof, and is based on the intolerance of starches, fats, sweets, and wines. Milk consequently is one of the first of the common foods to disagree. Starches, unless permitted to be destroyed by stasis and fermentation, are voided in excessive quantity. Fats escape in like manner in the fæces. Sweets add proportionately to the flatulency. All wines, except the oldest and lightest, are badly tolerated. Make carefully selected and scientifically prepared and easily digested and nutritious meats the basis of the diet, give one or more of the badly tolerated class of foods in an easily digested form and not in excess, regulate peristalsis, examine the stools, apply our knowledge of physiological chemistry, and the results will be pretty definite and conclusive.

Such are the particular symptoms of which the symptom group is composed, and it is on the ever-varying combination that the diagnosis of intestinal indigestion is based —a diagnosis which is always difficult and requires the very closest clinical study. The chemical condition of the stomach, both during and in the interval of digestion, the time and thoroughness with which it empties itself, its size and the tonicity or flaccidity of its walls, can by a few examinations and tests be readily ascertained with a good deal of certainty. But the disorder in the intestine is enshrouded in difficulty and well protected against chemical exploration. But a methodical study of the symptoms and of the physical signs, the examination of the urine and of the stools, and a careful use of the diet test, will make it possible to form a right and definite conclusion. To each symptom we assign its possible causes—what conditions and where located would produce it. In turn we treat each prominent symptom in this manner. We then apply the same method to the symptoms as combined, until we arrive at the possible explanations of the symptom group. In this procedure the chemical or physical process of digestion will be found more or less faulty, and possibly also the special defect be revealed. The examination of the urine for decomposition products after the large bowel has been previously thoroughly washed out will confirm or further limit our conclusions and supplement our knowledge. The diet test may then be made and a positive result will give to our inferences a high degree of moral certainty. This method will turn on more light than any other with which I am acquainted, but it requires time, close observation, careful reasoning, and disagreeable work. The solution of a difficult problem and the rational treatment of the patient are the rewards of the conscientious endeavor.

It remains to differentiate intestinal from gastric dyspepsia, and then to separate the disorder into its three great varieties. But be it understood that certain forms of gastric dyspepsia always lead to disorder of the duodenal process; and, *vice versa*, that intestinal indigestion frequently deranges the functions of the stomach; and that the two are sometimes inseparably bound together as the manifestation of a common cause, or as the expression of one disease.

Heartburn, acidity, pyrosis, nausea, vomiting, epigastric pain and tenderness, are more or less characteristic of gastric dyspepsia. Flatulency can be located in the stomach and in the intestine by the physical signs. The time of appearance of the distress or pain must not be given too much consideration and value; the pylorus is not an incorruptible guard; gastric peristalsis is not a fixed quantity. The food does not, like a sparrow—to adopt a favorite simile of early English song—fly in at one window and, after a brief sojourn, disappear through the other. The entrance is usually rapid and surprisingly abrupt, at least such is the custom in America; the duration of the rest is very variable, and the time of departure of each individual traveler is conditioned by varying circumstances. Nothing is more remarkable than the likes and dislikes, the whims and fancies and conduct of the human stomach. If it be remembered that the stomach can be filled with swallowed air or with gas regurgitated from the duodenum or diffused from the blood, the time of appearance and location of the flatulency, pain, and discomfort will be available in differential diagnosis. Auto-infection is more common in intestinal indigestion. It may well be doubted that even in the flaccid gastric dilatation of Bouchard the toxines are formed in the stomach, and enter the system from this point, as the neuromuscular form of intestinal indigestion is the usual accompaniment of this condition. Simple emaciation without cachexia, or a full and ruddy face with vaso-motor unrest, is the rule when the disorder is limited to the stomach; the muddy complexion of severe cases of intestinal indigestion is well known. The urine is sometimes characteristic; the diet test is of inestimable value; and the physical signs of gastric dilatation, and of dilatation or contraction of the colon, may be of very great weight. It is not so easy a matter as might be supposed to diagnosticate and locate dilatation. In using inspection, palpation, and percussion, it is essential to remember the surface anatomical markings. About five sixths of the stomach lies to the left of the median line in the epigastric and hypochondriac regions and is entered by the œsophagus behind the sternal insertion of the cartilage of the seventh rib; the pyloric extremity (about one sixth) is to the right of the median line and terminates in the duodenum on a level with the tip of the ensiform cartilage, and about two inches to its right, behind the end of the eighth costal cartilage. When gently distended, the fundus rises to the level of the fifth rib, and the greater curvature sweeps forward and downward to the right, passing just above the umbilicus. It is easy to see how the overdistended stomach produces dyspnœa and palpitation by interfering with the action of the right heart and diaphragm and the expansion of the lung. The cardiac end is fixed, the lesser curvature is only slightly movable, and the position of the greater curvature is conditioned by the degree of distention of the stomach and the displacement of the pylorus, which in disease can sometimes be felt below the lower border of the liver. Only a small area of the organ is superficial, and in contact with the abdominal wall below and beyond the left lobe of the liver and with the left anterior thoracic wall, the latter forming the half-moon-shaped space of Traube. The colon begins with the blind pouch in the right iliac fossa, ascends in front of the right kidney, and forms the hepatic flexure near but to the right of the gall-bladder, arches backward across the abdomen above the navel in a line joining the tips of the eleventh ribs, bends beneath the lower border of the spleen, and descends to the upper part of the left iliac fossa, where it terminates in the sigmoid flexure. The large bowel is very movable, the transverse arch is particularly free, and the cæcum, the hepatic, splenic, and sigmoid flexures are the favorite sites of dilatation. In the diagnosis of gastric dilatation, the methods of Frerich (distention by CO_2 generated in the stomach), of Lente (palpation of the sound moved about in the stomach), and of others (pumping in air to distend the viscus through the stomach tube) are not available in private practice. The clinical history, the discovery of the peculiarly shaped asymmetrical bulging on the left side and the perception of peristalsis, the examination of the vomit, succussion-splashing and seething, the location by palpation and percussion of the greater curvature on a level with or below the navel, will commonly establish the existence of extreme and moderate dilatation without a resort to heroic procedures. If after emesis or stomach washing a glass, or even a pint, of water is introduced into the stomach, the line of water-dullness in the erect position which is supplanted by resonance when the patient lies down will locate the lower limit of the stomach (modified after Penzoldt). The pitch of the percussion note is higher in clonic dilatation, is commonly associated with large and foul diarrhœal movements, alternating with constipation; the dilated part can be flushed out with a saline purge and enema and inflated with air through a long rectal tube; and if the stomach is not dilated, the vomit and clinical symptoms peculiar to gastrectasia are absent. It is on these considerations that the differential diagnosis is founded.

A classification for use at the bedside should be simple and each division clearly characterized by distinct symptom groups. The disorders of digestion may or may not have a basis in pathological anatomy, and morbid tissue change may underly or accompany the unhealthy variations in the physiological process. We will, therefore, consider discoverable lesions as links in the ætiological chain and classify intestinal indigestion accordingly as the *chemical* or *motor* process or *both* are disordered. The third is a union of the first two varieties which are joined by a common bond, the one being dietetic or neurosecretory and the other neuromuscular. There are two sets of nerve fibers (or one set having a double function) controlling secretion, the one influencing the functionating cells and the other the blood supply. The blood and the nerves, through their intimate relations with nutrition, commonly fall together, and it is chiefly a matter of historical or scientific curiosity as to which was first in the field; when the patient consults the physician the two forces are usually closely allied in a self-destroying war.

A great deal has already been said under ætiology and symptomatology that is useful in the differentiation of the varieties, and the reader will be spared a repetition. We would add a few words on the "*diet test*" before passing on to the treatment. It is much more satisfactory and more definite and more conclusive to make a test tube of the alimentary canal than to try to imitate natural digestion in the laboratory. If the cause of the disorder is dietetic and the abuse or error has not established a motor or secretory defect, the restriction of the quantity and the regulation of the quality of the food which composes the mixed diet will relieve the symptoms and make the patient comfortable. If the chemical process is at fault, the starches, fats, sweets, and wines are badly tolerated and imperfectly digested. The presence of dilatation, constipation, or diarrhœa would incriminate the motor factor, and, after its regulation, the toleration of the foods normally digested in the intestine would exclude defective secretion. And we read in the urine, in the fæces, in the physical signs and subjective symptoms, the result of the experiment which Nature, the master physiological chemist, has performed under our direction.

Digestion is accomplished in contact with, but virtually on the outside of, the body; and, as we have seen, can be deranged in two ways—by unhealthy alimentation and by faulty secretion and motility. A proper diet alone will effect a cure if the disordered chemical process has not established abnormal secretion or muscular movement. But cases so simple rarely come to the physician's office. It matters little through what channel the digestion has been disturbed. If the cause is present and still active, it is essential to direct our treatment also against it; but the damage persists after the removal of the cause. The origin of the trouble may be in improper eating, or in unphysiological living, or (if the gynæcologist will have it so) in a diseased uterus, tube, or ovary; but you may regulate the diet, put the manner of living on a right basis, and restore the generative organs to health or cut them out, and the intestinal indigestion will still persist as a most damnable and rebellious legacy. And so it is that when the nervous system and nutrition are brought under the evil influence, the only hope of cure lies in a comprehensive treatment that reaches out beyond the local causative and digestive disorders and embraces the patient that secures good digestion, healthy nutrition, and physiological living in a suitable environment.

We have already seen how large a number of intestinal dyspeptics, through forced work or through hyponutrition, are or become neuropathic. And it is the neuropath who requires faith and hope and contentment to lead him on. Mind is a very subtle power which modifies in some unknown way the medium through which it arises, and the parts to which it expresses its commands. Thought, feeling, and emotion are not simply the aurora of mysterious cerebration—the correlatives of material impressions. Man is not a mere automaton, conscious or unconscious, as heredity, development, and experience dictate. But the brain, in a sense, creates and it controls the life of which it is the ingrafted flower. The influence of the mind on function, particularly on digestion and nutrition, is very great. This is the thread of gold, the bright line of truth which runs through many a grand error or delusion. Suggestion (or expectant attention), all unconscious though it be, is the wonder-working power in amulets, relics, magnets, in "Christian science," in the "faith cure," in hypnotism. Disbelief prevents or breaks the spell. *The full confidence and hearty co-operation of the patient the physician must possess in order to be master of the situation; and a hopeful, cheerful, contented mind is a power which makes for health.*

It is the business of the physician to instruct as well as to bless. To do the best that others have done and he himself can think of for the relief or cure of disease is not the fulfillment of his high calling. The physician's office is a university hall as well. And the remarkable ignorance which prevails among even the most enlightened people of the plainest and simplest rules of healthy living reveals only too clearly the manner in which these public duties are performed. Dyspeptics are as ignorant and perverse as little children, and we must first tell them how to keep well before directing them how to get so. A very large percentage of the disorders of digestion are either caused or nurtured by bad habits, and it is most useful and essential to enforce physiological living as regards bathing, eating, rest, exercise, work, sleep, clothing, mental and moral control.

A good morale, physiological living, and a proper diet comprise the treatment of the mild cases. Benefit will also be derived from mild local and general faradism, massage and Swedish movements, outdoor life in a pure atmosphere, and general tonics. These patients with slight disorder of the digestive process are usually too much drugged. This over-zeal on the part of the physician is to be attributed to the impatience of the dyspeptic. Permanent results come slowly. The digestive organs have been habituated to the performance of bad work, and it requires time to eat away the iron chains. It takes anywhere from three months to as many years to correct the unhealthy variation, which has an inherent power of self-perpetuation, and to make, through force of habit, normal digestion the law of being. Physiology and pathology diverge on a plane inclined downward and progress becomes faster and easier every day along the route selected by circumstance. Law is supreme and irrepressible both in disease and in health, and we direct and fix the vital force in the right channel by the proper changes in the physical, chemical, nutritive, mental, and moral circumstances by which its action is conditioned. Not the relief simply but the cure of these chronic disorders of digestion requires time.

But in the severe cases the treatment must comprehend other remedies and meet other definite indications. The one general condition which rises above all others in its evil influence is self-infection. Careful alimentation and strong natural barriers (active oxidation and a good liver) will arrest or destroy, while active elimination will remove, the impurities and poisons. The most powerful eliminating agent at our command is water (mineral, or, just as good, pure and hot) in large quantities. Self-poisoning is most frequent in indigestion accompanied by dilatation and deficient peristalsis—in the motor variety of the disorder; in a mild form it is not rare in chronic chemical dyspepsia. It is well known how frequent an accompaniment it is of acute dyspeptic attacks, both when primary and when ingrafted on the chronic trouble.

The special treatment of the disorders of the motor process includes many remedies of very great power—electricity, massage, stomach and colon washing, abdominal support, and drugs which give tone and strength and regular action to the muscular layer.

Faradism is the form of electricity that is of greatest utility. Central galvanization, when both secretion and motility are faulty, seems to pay for the time expended in its application. The anode is placed over the cilio-spinal center and the cathode is pressed in over the solar plexus and an uninterrupted current of about ten milliampères passed during a short séance. Mild general and local faradization imparts strength and tone to muscles and nerves. Local faradization also excites and regulates secretion. One broad electrode is placed behind over the cardia or lumbar region and the other slowly moved all over the stomach, intestine, and liver. With the intragastric use of electricity I have no experience.

Massage, like electricity, strengthens the abdominal muscles, increases gastric and intestinal tonicity and peristalsis, improves the local blood and lymph circulations, and promotes secretion. The time, duration, and frequency of the sittings and rubbings are determined by their objects and the effect produced, each individual case and condition being a law unto itself. Both remedies are contra-indicated by inflammation, malignant disease, ulceration, and generally also by the active period of digestion.

Stomach washing is a very popular remedial procedure. I find myself using it less and less every day. It is the remedy *par excellence* when there is spasmodic or organic stricture or obstruction of the pylorus. But in atonic dilatation the pylorus is yielding or already wide open. The stomach is then best cleaned and emptied by copious draughts of hot water, massage, and local faradization. This method stimulates and aids and encourages the organ to empty itself in the normal way. Stomach washing, on the contrary, leaves the viscus clean but flaccid.

The same objection applies, though in a less degree, to washing out the dilated colon. Mechanical distention does not improve tonicity and peristalsis. The procedure is useful to secure cleanliness while we stimulate and encourage by massage, electricity, and drugs the weak and lazy bowel to the performance of its work.

Sulphate of strychnine, in minute doses, is beyond question the best drug for this purpose. Tinctures and wines and syrupy mixtures are objectionable. Coca and damiana may also aid. Aloin, ipecac, senna, rhubarb, or stronger purgatives may be required for constipation.

The abdominal or pelvic supporting band as a remedy in dilatation and displacement we owe to the genius of Glénard. It should extend high enough to support the stomach when it is also dilated, and be loose above and tightest along the lower iliac segment. The relief is often instantaneous and remarkable. A silk-and-wool knitted abdominal protector may be worn beneath it.

The special treatment of chemical dyspepsia is vested in remedies to regulate and supplement secretion. We possess few drugs which have a selective action on the pancreas. Ether is probably one of them, but its value, on account of this property, is more than counterbalanced by the harm it does in other ways. Pilocarpine in small doses is a remedy of some utility and power. But to increase pancreatic secretion we are forced to depend on constitutional remedies—massage, electricity, and nerve tonics. It is equally difficult to supplement the pancreatic juice. Pancreatin given by the month is either wholly destroyed or partly destroyed, partly absorbed and partly passed on into the duodenum. If absorbed, it is eliminated by the pancreas and liver, and in large doses may produce temporary diabetes by increasing the formation of hepatic sugar (Defresne). Clinical experience commends its administration under the protection of bicarbonate of sodium against the hydrochloric acid of the gastric juice.

Many remedies promote the flow of bile, but nearly all of them possess the disadvantage of interfering with gastric or duodenal digestion. Merck's salicin sweetens and tones the stomach and increases, but not to a very great degree, the flow of bile. It has not the inhibiting influence of salicylate of sodium on gastric and salol on duodenal digestion. It may, however, be necessary to administer a cholagogue regardless of the temporary harm which it does. The administration of bile by the mouth has been highly praised by Dr. William H. Porter. Bile arrests artificial peptonization, but in the stomach exerts no disturbing influence on the chemical process, increases secretion, sharpens the appetite, and promotes nutrition (Dastre, Oddi). These are very strong statements and are, of course, based on the introduction of a small quantity of bile into the stomach, from which it is absorbed to rapidly pass to the liver, the biliary salts thus gaining access to the entero-hepatic circulation. Bile is a digestive secretion, but an *excretion* as well. Nature and clinical experience seem to agree that it is well to keep it out of the stomach. A cholagogue is more apt to put some new, fresh bile into the duodenum, where it seems to belong. My limited experience with its administration by the mouth has been unsatisfactory.

To increase intestinal secretion, ipecac in small doses is a pretty reliable remedy. Large doses of an alkali may be required to supplement the alkaline carbonate of the intestinal juice.

To control gross symptoms we have all of the symptom drugs of the materia medica at our command. We should be careful to select such as do least harm to digestion. Antiseptics are popular, but don't seem to do much good.

Cleanliness and regular peristaltic drainage are much better than antisepsis. Symptom drugs are rarely required if the remedies which impart systemic and local tone and strength, regulate or supplement secretion, and secure normal muscular movement are combined with a proper diet.

There is no other disorder of digestion in which the dietetic indications are so clear and so absolute. Intestinal errors are final, and occur right in the gateway of nutrition. A certain degree of freedom can be given the gastric dyspeptic, for the duodenum may correct the blunders or negligence of its assistant. But the diet of intestinal indigestion must be marked out in hard and fast lines. In the one a limited license may be tolerated; in the other the tyranny is unrelenting. In the one, concessions may result in a patched-up peace; in the other, the rule is of iron. Additions to the diet may be cautiously and reluctantly made while the patient is under the eye of the physician, but in the beginning the control must be absolute and the firm grasp only slowly relaxed as the digestive ability of the intestine increases. I am now speaking of the cases in which there is an established defect of secretion or of motility, be it functional or organic, it matters not so long as the capability of the digestive system is the dietetic guide.

The best diet in intestinal indigestion—and I state it with all the force of a wide experience—is a diet of lean meats. The worst foods are those that require the bile and intestinal juice to digest and absorb them. Intestinal dyspeptics digest incompletely and with the greatest difficulty sweets, fats, starches, and wines. We know that a good deal of starch in some way disappears in the absence of pancreatic juice, that steapin only splits neutral fats into fatty acids—and glycerin—while cane sugar is inverted almost exclusively by the intestinal juice. Milk occupies an intermediate position, because the intestinal juice has nothing to do with its digestion. It is a popular error to suppose that this mixed food is chiefly digested in the stomach. The casein is divided by the lab-ferment of the stomach into hemicasein-albumose, which is absorbed (with or without further peptonization), and caseogen, which unites with the alkaline earths to form cheese and passes with the other ingredients on to the duodenum (Arthus). In the beginning, milk may completely relieve the gastric symptoms, but the objections to it are fatal. It does not give the duodenum rest; it contains fat, lactose, and casein; an excessive quantity must be given to maintain nutrition; it can not be employed when gastric dilatation is present as a complication. An exclusively milk diet is essentially a starvation cure (Ewald). Whatever be the explanation, the physiologist and chemical pathologist may decide. I base my contention on clinical experience, and I know that a diet of lean meats is the one most certain to give brilliant results. The diet may be arranged in three classes—the exclusive, rigid, and advanced.

Exclusive Diet.—The lean meat of beef or mutton and the white meat of chicken. The muscle pulp, free from fat and fibrous tissue, or the adult animal only is permitted. The American chopper in this country, and the Galante-Debove pulpifier in France, are the best instruments. Skimmed meat juices. Whites of eggs cooked just enough to hold together. And to this list may be added Mosquera's beef meal. Lemon juice with or without horse-radish. A cup of weak coffee or tea without sugar and clear, or a glass of hot water. This is the diet of the severest cases, and is soon supplemented by the articles of the second class.

Rigid Diet.—The articles of the exclusive diet. Broiled beefsteak or roast beef. Roast leg of mutton or broiled chop. White meat of fresh fish (sole, whiting, flounder). Soft part of raw, roasted, or broiled oysters. Cooked celery, water-cress, crust of stale French roll. Dry toast with a little butter. Clear and unsweetened coffee or tea. A little diluted brandy or whisky may be tried.

Advanced Diet.—To the preceding articles may be added broiled game, venison in season, sweet-bread, eggs (poached), rice, cracked wheat, California wafers, wheatina—thoroughly cooked. Baked floury potato, French peas, string beans, tomatoes, and spinach (if no lithæmia). *Purées* of fresh vegetables. The juice of a few grapes. Milk warm from the cow or sterilized as soon as drawn. Tea or coffee without cream or sugar. Light claret or old dry sherry. A little Worcestershire sauce. No veal, lamb, hog-meats, goose, duck, cod, herring, salmon, or other very firm and fat fish; no old or raw vegetables; pastry; very acid or sweet fruits; no cheese.

This dietary is adapted alike to the chemical and motor varieties of dyspepsia, the varying element being the quantity of fluid taken with the meals. The dry diet, first advocated by Chomel, is to be used in dilatation and deficient secretion. The five or six ounces of fluid should be slowly drank after the meal, so that the stimulating action of the dry food on salivary and gastric secretion may be obtained. Starving these patients for fluid will not cure them; in the interval (which should be long) between meals enough water should be ordered to keep the urine in the proper condition, avoiding distention of the stomach and emptying it by the means already delineated. Hot water is rapidly absorbed and promotes downward peristalsis, increases primary oxidation and elimination, and is almost essential in the exclusive diet. In hyperchlorhydria, water can be taken freely as a diluent and to prevent pyloric spasm against the passage of a hyperacid chyme.

Detailed and dogged supervision is the price of success. To prescribe a diet and then not see that it is digested and assimilated is to court failure. By the right quantity and quality of food and water the urine should be kept free from deposit, of normal slight acidity, of specific gravity about 1·014 or 1·018, and without excess of coloring matter; the stools healthy, the patient without local distress related to eating and without abnormal flatulency, and the blood gathering hæmoglobin and red corpuscles. These are the clinical guides in the continued use of the systematic treatment.

Intestinal indigestion is not curable by drugs alone. The treatment must draw on a richer store of remedial powers. The much drugged and neglected baby soon withers and falls away; the well-fed and carefully nursed child is of more vigorous growth. The one is a flower without roots and as weak as a life without good hygiene and the right foods. The very drugs, the warm sunshine which should be its strength, only hasten the approaching decay. Curative treatment is of a more vigorous growth, running down into the underlying systemic causes and twining its tender feeders about each unhealthy variation, and rising in its gathered strength through physiological living, normal secretion and excretion, and careful alimentation to a right performance of all the nutritive processes. We treat digestion, nutrition, and the nervous system, the physician and patient standing shoulder to shoulder in the struggle to bring the organism under the dominion of the gentle forces which make for health. The powers of evil that one can not stay with iron chains the sweet influences of hope, contentment, and quietude will sometimes lightly bind.

10 East Forty-third Street.

ULCERATION OF THE RECTUM,

DUE TO VARICOSE VEINS.*

By JOHN BLAIR GIBBS, M. D.

There is a class of diseases of the rectum that deserves special attention: a form of trouble that is not rare, has generally marked symptoms, yet, strangely enough, excites much less interest than affections of less importance.

I refer to ulcerations of the rectum not dependent upon syphilis, cancer, tuberculosis, or any known form of constitutional taint. These lesions are due to mechanical or other local injury, generally slight in character, yet which not only do not tend to spontaneous cure, but even at times eventuate in great destruction of tissue and incurable stricture.

It is unnecessary to go through a tedious recital of case after case, but I shall bring in an occasional one to illustrate the various stages and degrees of the disease.

The symptoms are those of ulceration in general from any cause whatsoever, modified by the form and function of the organ. The usual complaint is pain accompanied by discharge of pus and blood.

The pain comes on after defecation and is generally described as a dull ache, although it may be of any character, not infrequently referred by reflex to neighboring organs. The degree of pain is no index of the extent of the lesion, but, generally speaking, the lower down, the more distress. The discharge of pus takes the form of "morning diarrhœa," and in that form is almost pathognomonic. These symptoms are sufficient to induce a person to undergo examination, without which it is impossible to determine either the character or extent of the ulcer. The following case is typical:

It was that of a gentleman of thirty-five who had been suffering intermittently, more or less severely, for four years, during which time several operations had been performed without definite relief. Under ether was found an ulcer about the size of a quarter-dollar, two inches from the anus. This ulcer appeared healthy, not deep or punched out, no overhanging edges, while the granulations were soft and bled on touch. There was no assignable cause. Syphilis could be absolutely excluded and the general health was unusually robust. This case had been stationary for years and showed no tendency to heal. By special care, however, in three months complete cicatrization was obtained without any recurrence in three years.

A year ago I collected a number of similar cases, of which eight were watched to a termination. The points of similarity are worth a mention.

1. Due to no tangible or definite cause, or to a slight one.
2. In otherwise healthy persons.
3. Absence of constitutional taint.
4. Extreme chronicity.
5. Curable by means which will be spoken of later.

During the past twelve months I have run across six more of the same class, some of which are still under treatment. On looking up the general literature on the kindred subjects of ulceration and stricture of the rectum, especially from an ætiological standpoint, it is impossible to overlook the great importance attached to syphilis, and then a word or two is necessary to clear the way for the subject proper of the evening.

The opinion prevails in the profession, derived from the somewhat loose statements in surgical literature, that any marked destruction of the lower gut is presumptive evidence of syphilis, unless positive proof is adduced to the contrary. In other words, the illogical position is assumed that because some patients have, or are supposed to have, some form of syphilis in the rectum, all cases of doubtful ætiology should be forced into the same category. It is to methods of this kind that exception should be taken.

Being connected with the clinic for diseases of the rectum in the Post-graduate Hospital for three years—ever since its inception—and having also had full opportunity to observe Dr. Kelsey's cases in private practice and to use the same for the purposes of this analysis, I have tried especially to answer the following question: Does syphilis, in any form, play an important rôle as a causative factor, and from the standpoint of frequency, in ulceration and stricture of the lower gut?

Were it not for the certainty of antagonizing an accepted article in the pathological catechism, I should say that syphilis tries hard to avoid the rectum; and when hard pressed invades it no more frequently than the stomach, small or large intestine, or any other part of the alimentary canal. The following statement stands unassailable:

In diagnosticating any real or supposed syphilitic lesion of the rectum, the same evidence should be produced and required as in determining the same disease in any other organ, neither more nor less. In other words, diagnosis by exclusion is not scientific, and does not warrant positive conclusions on unsettled questions of pathology.

The initial lesion of syphilis—the hard chancre—may be found in any accessible part of the body, according as the conditions of direct infection are favorable or otherwise. I have been able to find only one case in the whole range of American literature where such a sore has been diagnosticated, with the assistance of an anæsthetic, and proved by the classic secondary manifestations following. For this I am indebted to Dr. Frank Hartley, of Roosevelt Hospital.

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* Read before the Society of the Alumni of Bellevue Hospital.

Secondary syphilis, in the form of condylomata and warty growths around the anus, is common enough, but the lesions do not extend up into the rectal pouch.

Secondary ulcerations of mucous membranes have been well described by many observers, principally in the buccal cavity. In the rectum, however, well-authenticated cases are extremely rare, even in the experience of those whose opportunities are the greatest.

The process, when it does occur, is as follows: Local hyperæmia, cell proliferation, connective-tissue hyperplasia, softening and necrosis, involving more or less surface and varying in depth, according as the submucous connective tissue is or is not implicated.

I have one case under observation now that will probably have to plead guilty to this indictment, ultimate proof depending upon the result of treatment.

Later forms of specific ulceration differ more in degree than in kind, whether true tubercular syphilides or gummata. The infiltration is deeper and the destruction more widespread. At the same time it is less frequently seen than the earlier and simpler varieties of the disease.

That very interesting condition known as ano-rectal syphiloma is fully described and discussed in Dr. R. W. Taylor's monograph on the subject.

The following is a striking case of simple ulceration:

The patient, a healthy man of forty, one year ago received one or more injections for the cure of internal hæmorrhoids, which proceeding was immediately followed by a severe proctitis, confining him to bed for several months. When first examined last December he complained still of pain, morning diarrhœa of pus and blood, and, naturally, great mental anxiety. Under ether was found a large cavity of the size of half a dollar, nearly half an inch deep, and lined with red, flabby granulations. Surrounding mucous membrane sound. Circumscribed sloughing, due to injections of carbolic acid, easily accounted for the destruction of tissue, which had made no attempt at repair. This case is not unique; on the contrary, is but one of many for which this "safe" and easy method of curing piles is responsible.

Another patient presented the following conditions: When examined under ether large prolapsing hæmorrhoids were found complicated by a deep posterior fissure, which had extended upward and spread out into a large irregular ulcer, which last partly surrounded a large fleshy polypus. This growth, acting as a foreign body, was the cause of the ulceration, aggravated by the general hæmorrhoidal condition.

Generally speaking, it may be stated that simple ulcerations are due to local injury, to which the lower gut is exposed. Constipation, hardened stools, necessitating violent straining, is the most common, producing one or more fissures, which eventually extend upward and eventuate in ulcers, sometimes small, always intractable.

The vast bulk of fissures heal without injury, but the exceptional one under unfavorable conditions follows a very different course.

Next may be mentioned foreign bodies, such as fishbones, etc., substances introduced by the patient, polypi within the grasp of the sphincters, carelessly treated surgical wounds, injections of carbolic acid, and injuries received during labor.

Usually the traumatism is but trifling in severity, yet has been seen time and again to result seriously.

In the cases under my observation the most perplexing feature of the disease is its chronicity, or, worse still, its tendency to spread from small fissures to decided ulcers in patients not decrepit by age, or broken in constitution by vicious excesses or constitutional dyscrasia, but, on the contrary, in the prime of life and vigorous health.

The question arises, Why do not these ulcers heal in about the same time and under the same treatment required in the cicatrization of similar sores in other parts of the body?

Why is it that a burn in the mouth, for instance, causing destruction of mucous membrane, heals rapidly even in debilitated subjects, while a like injury to the rectum means weeks or months in bed? The grinding of the sphincters by keeping up irritation may have something to do with it, or a general debility from independent organic disease may play a small part, but in many cases the sphincters do not grind and the general nutrition is excellent.

The one answer that seems reasonable has been forced upon me by the one practical necessity of the treatment.

In spite of all that can be done, these cases remain stationary unless indefinite rest in bed be insisted on and carried out. Feed your patient till he is robust to obesity; stretch his sphincters to your heart's content, if he will let you; curette his ulcer or cauterize through a speculum; but, unless the recumbent position is maintained for weeks or months, failure is the only reasonable anticipation. This position involves a change in the venous circulation of the gut, and a change of very decided character.

In the erect position gravity determines sufficient blood to engorge the veins of the whole lower extremities, which when not properly supported become tortuous and dilated, leaving the condition known as varicose.

There are, then, localities where chronic dilatation of veins is common, all three often seen in the same individual. They are the legs, the rectum, and the spermatic cord. In this last the symptoms of varicocele are pain and œdema, but in the first two is added the well-known chronic varicose ulceration.

The history of these cases varies but little. They usually come from some traumatism sufficient to cause a break in the skin or mucous membrane; then septic infection is introduced, and the impaired circulation does the rest. The little sore when neglected gradually extends to almost any size.

In the lower leg this form of ulceration is common enough to be a public nuisance in our surgical dispensaries. The same thing in the rectum has not been emphasized, although the analogy is complete.

The so-called hæmorrhoidal area extends from the anus about three inches up the gut, and consists of a venous plexus encircling the intestine for that distance, and lying in the submucous connective tissue. At the upper margin of this zone many of these veins perforate the muscular coat and pass upward, communicating with the prostatic and other plexuses in the vicinity. The middle part of the rectum is largely supplied with veins, which are supported only by the extremely lax mucous membrane of the organ.

In children and young adults the varicose condition is rarely developed, but most people above the age of thirty are more or less subject to this apparent inability on the part of Nature to take care of itself.

No one will deny the prevalence of hæmorrhoids, yet even this condition is not necessarily even suspected till it has reached an aggravated form or causes acute symptoms.

In one set of cases the first indication will be hæmorrhage from intense venous engorgement after years of uncomplaining existence. Again, it may be pain due to inflammation or extravasation. The most pronounced cases are those in which the tumors are large enough to prolapse during the act of defecation, yet many remain for years without serious annoyance.

If the well-marked cases of varicose development are of such frequency, it is hardly a presumption to state that milder forms are equally common. Here are all the conditions necessary to produce simple varicose ulceration, merely waiting for the initial injury to start the process. It is true that we can not here examine the condition of the two venous systems of the lower gut as in the leg, on account of the anatomical inaccessibility of all but the lower submucous veins. Those high up or on the outside of the rectal wall are beyond the reach of investigation. Consider the matter in this wise: We have a hollow tube, normally collapsed, unsupported by strong muscles, largely composed of two complex venous plexuses in a dependent part of the body, at the lowest point of the portal system, and subject to many mechanical influences to produce engorgement of blood in veins not even properly supplied with valves. Constipation means pressure and congestion. Pressure of a displaced or gravid uterus acts in the same way. Coughing and crying produce temporarily the same result, as can easily be seen in the noisy stage of ether narcosis.

The analogy between the consequences of varicose disease in the rectum, on one hand, and the lower extremity on the other, is carried along a step when we come to the all-important question of treatment. The cardinal principle of success involves the restoration of the impaired local circulation during the period of repair.

In the leg the simple cases can be handled by pressure and support by means of strapping with adhesive plaster and well-applied bandages. After complete cicatrization, recurrence is prevented by the use of elastic stockings. In large ulcers of long standing, when both deep and superficial veins are diseased and the limb is in a state of chronic œdema, severer measures are indicated: excision of the unsound granulations, or, much better still, destruction of the diseased veins by careful dissection or multiple ligation.

A small ulcer in the rectum, perhaps of the size of a postage-stamp, of course can not be treated by strapping or bandaging, so we must accomplish the same thing by the next best means in our power—that is, prolonged rest in bed in the recumbent position. Nine out of ten cases involve but a small area, from that of a thumb-nail to that of a silver quarter, most frequently situated posteriorly and from one to two inches from the anal verge. The muscular coat is seldom penetrated. In fact, the affair seems almost insignificant until experience proves unmistakably the error of such an opinion.

Leaving out of consideration the pain and disability consequent to any chronic affection, the possibility of being aggravated beyond the reach of simple surgery has to be grappled with. Small ulcerations are tedious and difficult to handle.

Large ones may and do assume proportions of incurability, or even positively threaten life. I have a patient at present under observation who, eight years ago, had only internal hæmorrhoids, but which now, through long neglect, have developed into fibrous stricture and ulceration that may require the removal of two inches of intestine.

As time is an important consideration, the question of operation generally presents itself. The propriety of removing such hæmorrhoids as may exist is apparent if operation of any sort is decided upon. Failure to detect and incise existent submucous fistulous tracts is fatal to success, alike mortifying to the surgeon and disheartening to the patient.

When an ulcer has closed down to a small spot which persistently remains open, the existence of one of these pockets should be suspected.

These complications eliminated, curetting of the ulcer through a large speculum is probably the most efficient method of stimulating sluggish granulations.

Stretching of the sphincters is futile for the reason that the paralysis aimed at wears off in a few hours. The only effective means of putting the parts at rest long enough to do any good is the careful use of the knife. The proper method, and one that is applicable to nearly all cases, is to make an incision longitudinally through the base of the ulcer deep enough to sever the circular muscular layers underlying. This cut, unless very superficial, should be continued through to the anus for the additional purpose of securing drainage, thereby avoiding the unquestioned danger of periproctal cellulitis.

Whether the necessity exists for the performance of a complete proctotomy, which this incision involves, must be decided by the merits of the case. Although curetting and incision save weeks of time, after-treatment is of equal importance. Rest has been sufficiently dwelt upon, and as cicatrization gradually takes place, applications of weak solutions of nitrate of silver (gr. x–lx to ℥ j) once or twice weekly rarely fail.

Persistence on the part of the attendant and docility on that of the patient almost guarantee a result, provided time is allowed.

Prognosis as to duration of treatment is out of the question. Two or three months for a moderately large ulcer is satisfactory work.

The last-mentioned group may be put down as the worst that ever falls to the lot of the general practitioner; but the specialist must go further and be prepared for the most aggravated cases of ulceration that admit of no com-promise. Whatever may be the cause, whether simple, syphilitic, chancroidal, or dysenteric, I know of no other disease that renders a patient's condition more hopeless and pitiable. The condition is so grave that considerable risk may be assumed.

Incision, so as to give access to the parts and to paralyze the gut for a few weeks, with subsequent treatment as just described, generally gives one the upper hand. With ordinarily decent material to work upon, gratifying results follow in many unpromising cases.

But it is just here that complete resection of the whole area of disease, going through the thickness of the gut, combined with linear proctotomy, is most applicable. More experience of this operation is needed to prove its superiority over simple incision. I decidedly favor it, provided sufficient care is given to the prevention of subsequent stricture or incontinence.

When an ulcer has spread over the whole area of the rectal pouch, the injury is irreparable. Pain, sleeplessness, reflex disturbance of the whole digestive tract, wear down the general strength with the rapidity of a cancer.

Local treatment throws away the last and only chance by wasting valuable time that can never be regained. There are two surgical alternatives, one of which must be selected and acted upon.

First must be considered resection of the rectum, with suturing of the divided ends of the intestine.

All due precaution should be observed to avoid stricture or incontinence, according to the known technique of extirpations of the rectum; but either or both of these unfortunate consequences must be risked as secondary to the primary necessity of saving life, especially as a secondary operation may repair the shortcoming of the first. Resection of the rectum is severe, bloody, and often desperate—so much so that its risks may be prohibitive.

A debilitated patient may not be able to withstand the shock and hæmorrhage of an operation which removes several inches of intestine, as well as perhaps the coccyx and part of the sacrum.

The second alternative is inguinal colotomy. The limits of this paper do not admit of a discussion of the possibilities of a well-constructed artificial anus.

It has the advantage of being bloodless, safe, and rapidly performed; in fact, may be considered as minor surgery, as compared with the risks of a complete resection, while the subsequent comfort and satisfaction of the patient can only be appreciated by one who has been so unfortunate as to have taken the responsibility of carrying through several of these terrific cases.

The following points are for discussion:

1. Ulceration of the rectum is generally simple in character.
2. In persons otherwise healthy.
3. Due primarily to local injury.
4. History subsequently determined by varicose disease of the organ.
5. Are amenable to treatment that restores the venous circulation.
6. Are at times a menace to life.
7. Have no relation to syphilis regardless of proof or evidence.
8. As a corollary, whether specific, dysenteric, or otherwise, are necessarily rendered more intractable in a primarily diseased organ.

20 West Twentieth Street.

OUTLINE OF
A PLAN FOR AN EPILEPTIC COLONY.*

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It is a great pleasure to come before this board at the invitation of Mr. Letchworth and of your president, Mr. Craig, to speak to you upon a subject in which I have been deeply and earnestly interested and engrossed for five or six years, knowing that the law in this State has been passed, and that you are a commission appointed under that law, not only to select a site and prepare plans for an epileptic institution, but to prepare those plans on the colony system, with a view not only to the care-taking of this class, but to their education and their instruction in different trades and callings.

In this work we must lose sight of the word "institution" if possible. We must rather think of some small village. The less it is like an institution the better. There should be no very large buildings, nor should there be a symmetrical arrangement of the pavilions, cottages, workshops, etc., such as has been made at Gallipolis, Ohio. Although the ideas as to the character of an epileptic retreat, such as I have always maintained and frequently described in various papers, were carefully instilled by me into the Ohio commissioners who visited me in New York with their architect, and although my instructions were, in the main, followed in the distribution of buildings and the determination of their character and purposes, yet it was not apparently possible for the architect to rid himself of the hospital, asylum, or institutional idea, and doubtless, too, the people in the vicinity were eager in demanding something imposing in the way of State architecture.

1. The first point, then, to be borne in mind is that *buildings should be arranged in a village or colony plan*, separated entirely, often provided with their own little gardens, surrounded by hedges, so that they shall be as independent and home-like as possible. *Though there should be system in their arrangements, there should be no symmetry*, such as would lead to their designation as an asylum or an institution at first sight.

2. The second point is to keep in mind the aims of the colony.

(*a*) *It is to be a home*—a community of people cut off all their lives from ordinary social pleasures and pursuits by a malady that really robs them, in most cases but for a few moments each day, or week, or month, or several months, of their faculties.

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* Remarks made before the State Board of Charities, at Albany, N. Y., July 13, 1892.

(*b*) *It is to be a school.* Denied education in public schools, the epileptic here receives such advantages as he requires, and each and every member of the colony, without regard to age, should be given the opportunity, if desired, of acquiring knowledge.

(*c*) *It is to be an industrial college.* All useful trades and callings are to be conducted in this colony. Hence, provision for shops of various kinds must be made.

(*d*) *It is to be a hospital.* That is, every patient will be treated for his disorder, and there will be one building set aside for such as are feeble-minded, or insane, or confined to bed.

3. The third subject for consideration is the probable percentage of the various classes. Roughly speaking, we should provide an observation building for new cases (five per cent.), hospital accommodation for say ten per cent., school buildings for fifteen per cent., and shops, residences, etc., for some seventy per cent. of workers.

4. As to land, there should be from 300 to 400 acres or more, if possible, diversified but well adapted for agriculture, stock-raising, and the like. Out-of-door employment is one of the best means of treatment of epilepsy.

5. The colony should be situated in the center of population, because of ease of access for patients and advantages for the visitation of friends. But a far more important reason for placing it near the largest city of the State is to secure the services of a visiting board of those gentlemen who make a specialty of nervous and mental diseases, and of an expert pathologist, who together would make it one of the great objects of the colony to discover the cause and cure of a disease from which some 120,000 people are suffering in the United States alone at the present time.

6. Suggestions as to buildings and their arrangement:

(*a*) The superintendent should have a private house to himself.

(*b*) The observation wards (five per cent. of cases), the infirmary wards (for the sick, infirm, demented, and insane, amounting to ten per cent.), and the administration building could be combined advantageously. The observation wards are for new-comers, who must be examined and studied for weeks at a time in order to ascertain their character, their abilities, the nature of their seizures, and the proper kind of treatment for them to undergo. Between these should be the administration building, offices, rooms for one or two resident physicians, accommodation for members of a nurses' training school, etc. Back of these again, but connected by a corridor, are the hospital wards, to be arranged not only for those who are sick from ordinary illnesses, but also for those who are too feeble-minded for work or who are insane. Great pains should be taken to isolate the wards for excited patients to such an extent that no one will be disturbed by them. These buildings should contain small dormitories and private rooms. In some part of the hospital should be a hydrotherapeutic chamber, with walls and floor impermeable to water, provided with rain-baths, hot boxes, cold plunge, douches, and bath-tubs. There should be separate kitchens and dining-rooms.

(*c*) Remote from here a group of cottages for *women*, with extensive gardens for the raising of flowers, flower seeds, berries, bees, etc.

(*d*) A group of cottages for *men* next to the gardener's house. These are the men who work about the grounds, caring for the trees, lawns, hedges, paths, and roads. The grounds will be made not only attractive, but instructive, for all trees and shrubs are to be labeled, and an effort should be made to establish not only a botanical garden but a zoological as well.

(*e*) A school building should be provided for children of both sexes of tender years. It should be their residence as well, and the school conducted on the kindergarten plan.

(*f*) A large school building for each sex, containing not only school and recitation rooms, but rooms for studying music, drawing, designing, architecture, modeling, and the like, also rooms for teachers and some of the pupils.

(*g*) A museum, lecture-room, library, reading-room, and gymnasium, with a swimming-bath, might be advantageously combined in one building.

(*h*) A chapel.

(*i*) Stables for cows, sheep, pigs, horses, and dairy, with cottages for men detailed to see to the work required in this department.

(*j*) A farmer's house, with a group of cottages for men engaged in farm work.

(*k*) Shops. *For men:* 1. Tailors, shoe-makers, and saddlers in one building. 2. Carpenters, painters and glaziers, furniture-makers, and upholsterers in one building. 3. Blacksmiths, iron-founders, tinners, and locksmiths in one building. 4. Printers, bookbinders, etc., in one building. *For women:* Sewing-room, dress-making, millinery, fancy work, etc., in one or two buildings. Bedrooms may be combined with some of these buildings, the object being to scatter the residents as much as possible.

(*l*) A central kitchen, bakery, and store-room, combined with a cottage or two for the women who work here. From this central kitchen may be sent out to the various houses the chief articles of diet, which should always be simple—bread, mushes, milk, eggs, and various groceries, soups and meat once daily. Every cottage, however, should have its own dining-room and small kitchen for reheating some foods and for light cooking.

(*m*) Laundry, wash-room, ironing-room, mending-room, with a residence for those women who are occupied in this department.

(*n*) A pathological laboratory of the most recent design fully equipped with everything requisite for good scientific work. This laboratory to be in connection with the mortuary and remote from other buildings. A cottage not far away, for the residence of the pathologist, would be necessary.

While I have endeavored to delineate as well as possible the needs of a model epileptic colony, there are many things not mentioned here that will develop with the gradual evolution of the colony. For instance, if the land is such that quarries exist upon it, or that brick may be manufactured, a new industry would arise, requiring its particular cluster of buildings for work and residence.

The buildings that I have enumerated reach the figure of about thirty. The Bielefeld colony, with a thousand patients, had fifty-five buildings at the time of my visit several years ago.*

With the exception of the observation and hospital building, none of the buildings need be specially planned to meet the wants of epileptics. They should be as much as possible like ordinary houses.

The ventilation should be by fireplaces and windows, as in ordinary town and country houses.

Each residence should have, if possible, a simple rain-bath, up-stair dormitories and bedrooms, with a sitting-room, small kitchen, and dining-room below.

It will doubtless be of advantage to make all buildings fire-proof.

All the buildings need not be constructed at once. A community of this kind can not be provided for in a moment. It must grow into a colony by a sort of evolution, its wants being supplied as they become manifest, through the intelligent direction of its superintendent and trustees. The inhabitants of this colony will in time be able to erect their own buildings as required.

And now a word or two as regards commitment. All patients under age can be sent by their parents, just as they would send children to boarding schools, transferring their parental authority for the time being to the officers and teachers of the colony. All other patients are to be voluntary denizens of the colony, except such as through mental impairment of any kind require confinement in the infirmary; and with these last the ordinary procedures taken in lunacy cases should be carried out, formally committing them to the infirmary of the colony.

201 West Fifty-fourth Street.

A CASE OF OBSCURE SCIATIC NEURALGIA
DUE TO OSTEOSARCOMA OF THE ILIUM.†

By JAMES P. TUTTLE, M. D.

The frequency of obscure sciaticas, and the fact that they are often due to neoplasms of the pelvis, make the following case of more than usual interest, not only from the clinical but also from the pathological point of view:

Mr. J. P., aged fifty-four years, a Hebrew merchant, was first seen by me in his last illness on December 13, 1891. His family history was without suspicion of tubercular or carcinomatous taint. He gave a candid personal history without any evidence of specific infection, and no recollection of injury of any kind. Two years previously I had prescribed for him in a slight muscular rheumatism, which yielded readily to treatment. Three months previously, in August last, he began to notice pain in his left leg, in the region of the sciatic nerve. It was not marked at first, and he paid little attention to it. Gradually, however, he lost strength in the limb, and he consulted a physician in Danbury, Conn., concerning it, who told him it was only a little rheumatism, such as he had suffered from before, and that it would soon pass away. On the contrary, however, it grew worse until, in December, it was difficult for him to go up and down steps. It was at this time that I saw him. He was well preserved, slightly cachectic, and declared himself entirely well with the exception of his left leg. Physical examination apparently bore out this statement, as I was unable to make out any organic lesion in him. Measurement failed to establish any atrophy or shortening of the affected limb. Deep pressure over the line of the sciatic nerve did not produce any acute pain, but flexion of the thigh upon the pelvis produced pain all through the leg, he said. Impact on the sole of the foot and upon the trochanter major failed to elicit any pain. The patellar tendon reflex was normal, and sensibility was unimpaired. There was loss of power in the leg to a slight degree. Although the patient complained of pain all the time, he could not localize it at any one spot. It was a diffused pain all over the line of the greater sciatic. The muscles responded to the electrical current perfectly well. Abdominal palpation and rectal examination failed to make out any thickening or tumor in the pelvis or abdominal cavity. His temperature at the time of my first visit (10 a. m.) was normal; but tri-hourly examinations showed that he was having from a half to one degree elevation of temperature at night. Believing then that I had a malarial element to deal with, I prescribed full doses of quinine at bedtime and salicylate of sodium during the day. The patient seemed to do very well for a few days, the fever disappearing and the pain subsiding materially. In about two weeks, however, while at stool one morning, he was seized with a severe pain in the lumbar region--a regular lumbago, in fact. His temperature was elevated, he was unable to move himself, and his sufferings were intense.

This condition yielded very slowly, and at the end of another week I called in Dr. E. G. Janeway to consult upon the case. The latter found nothing different in the case from what I have already described—viz., a rheumatic invasion of the lumbar muscles, and a sciatic neuralgia probably due to the same pathological cause. The probability of neoplasm, neuritis, spinal hæmorrhage, etc., was discussed, but no evidence could be found at this time justifying such a diagnosis. The lumbar symptoms improved, but the sciatic became aggravated, and he began to be hyperæsthetic all over the left lower extremity, and only obtained rest by the use of opiates in large doses. At this time (January 6, 1892) I called in Dr. B. Sachs to examine into the nervous element of the case. His diagnosis was the same as Dr. Janeway's and my own. He advised ice-bags along the course of the nerve, and aconitine pushed to its physiological effect. By these means the pain was much relieved, and we were encouraged to look for a rapid recovery. But the patient grew gradually weaker, general hyperæsthesia supervened, the pain in the left leg extended down into the ankle, and the muscles began to show evidences of atrophy. In fact, the patient was eating very little, and his whole body was becoming emaciated. His temperature had, however, become normal, and, his pain being less, we were inclined to regard the loss of power and rotundity in the leg to his general condition rather than to an undetermined local cause. From January 5th to 18th his temperature was normal, so that the taking of it was discontinued. On the 22d an elevation was observed; the patient was heavy, sleepy, and wandering at times; there was slight tympanites; the tongue was coated brown in the center, with red borders; and the whole physiognomy was that of typhoid fever. Dr. Sachs, who had remained in the case with me, examined him carefully with me at this time for any tubercular or suppurating focus, but in vain. On January 24th his temperature rose to 102° F. in the evening, and his heart began to get irregular.

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* The Bielefeld Epileptic Colony. *Med. Record*, April 23, 1877.—The Colonization of Epileptics. *Jour. of Nervous and Ment. Dis.*, December, 1889.—A Plea for the Epileptic. *N. Y. State Charities Record*, August, 1890.—Progress in the Care and Colonization of Epileptics. *Jour. of Nerv. and Ment. Dis.*, August, 1892.

† Read before the Section in General Surgery of the New York Academy of Medicine, April 11, 1892.

The urine was scanty, and responded to Ehrlich's test, once more showing its unreliability as a diagnostic means. His appetise failed, his strength decreased, and he became delirious more or less of the time. Under treatment directed to the symptoms he seemed to improve for a few days, his fever going down and his general condition becoming better. This change only lasted for a short time, and on the 4th of February it was seen that the left leg was rapidly becoming paralyzed, the knee-jerk was gone, and sensation was impaired. Dr. Janeway was again called in at this time, and he succeeded in making out a thickening in the left iliac fossa, but was unable to determine whether there was fluctuation or not. The patient being very weak, it was decided to stimulate him for a day or two, and then examine the swelling more thoroughly by aspiration or incision to determine the nature of the tumor. The next day the swelling was much more easily outlined, and gave to the touch a sense of solidity or a very tight abscess. His temperature at this time was 100·2° F, and his pulse 150 or more. That evening I was sent for, with a message from the nurse saying that the temperature had gone up to 103° and the pulse had fallen to 80. I saw him in about half an hour, but found the pulse beating at the rate of 155; temperature, 103·5°. I then thought the nurse had made an error in counting the pulse. The patient was exceedingly restless, delirious, and rapidly losing ground. Freer stimulation was begun, and I sat by the patient to watch his pulse for a few moments. When I first touched it it was beating at the rate of 150 a minute, but suddenly and without warning it dropped to 72, continued regular at this rate for some five minutes, then jumped to 112 for a few minutes, and then back to 72, where it remained, more or less irregular, for an hour. Dr. Sachs was sent for and verified this unusual condition. A hypodermic injection of a third of a grain of sulphate of morphine put him to sleep in less than two minutes, the pulse at the same time rising to 140 again. He slept through the night, his heart being kept up by hypodermics of whisky and digitalis. That night there was observed a large swelling just above the trochanter, more or less red and fluctuating. The swelling upon the inside of the ilium was also increased, the pulse very rapid, and the temperature 106·5° F. At a consultation between Dr. Sachs, Dr. Janeway, Dr. Gibney, and myself, the following morning, the tumors were aspirated, only blood being drawn off through the needle, and it was decided that the case was one of inoperable neoplasm of the pelvis. The patient lived until 6 P. M., his temperature having reached 108·5° half an hour before he died.

An autopsy was denied, but later consent was obtained to make a section of the tumor and ascertain its nature. This was done two days after death. An incision was made along the crest of the ilium, and, when the fasciæ had been detached, the whole crest of the bone for the space of two inches came off in my hand. The swelling on the inside of the bone extended down to the upper border of the ischium, and backward to the sacro-iliac juncture, being elevated about three quarters of an inch above the normal surface of the bone. The iliac vessels and the sciatic nerve could be felt passing over the tumor, but they did not seem to be involved in the growth. The bony shell of the tumor was so thin and disorganized that the finger could be easily pushed through it into the substance of the tumor. The latter was a mass of bony and cellular tissue mixed throughout. There were several small cysts in it, but they contained only a clear, viscid fluid and no pus. The tumor on the outside of the pelvis, above the trochanter, was a hæmatoma, due to the breaking through of the outer shell of the ilium. The hip joint had been free from any involvement during the whole attack; but when I cut the section from the tumor for examination, the hip joint was cut into and the whole head of the femur came through into the pelvis. The microscopic examination of the specimen was made by Dr. L. Heitzman, and the following is his report: "The specimen is composed of medullary tissue with spindle-shaped bodies of varying sizes which branch out at acute angles, unite, and form a reticulum. The meshes of the reticulum are elongated and hold a slight amount of basis substance. In different portions of the tumor we see new-formed bony tissue—in different stages of development—which has apparently developed within the sarcomatous tissue. Hæmatoidin crystals are also present in moderately large numbers. The sarcoma is of the spindle and net-celled variety, in some places closely resembling myxosarcoma. The diagnosis is osteosarcoma." The pathologist of the Section will recognize at once the rarity of this variety of tumor.

SURGERY UNDER HYPNOTIC SUGGESTION.

By WILLIAM LEE HOWARD, M. D.,
BALTIMORE, MD.

Since writing an account of some earlier cases * I have been able to demonstrate some good cases to the profession in Baltimore. Without being unduly prolix, I will allow the cases and facts to speak for themselves.

Case I.—Mrs. S., a young married woman, aged seventeen years, had miscarried about three months before she came under my care. She had been treated at the time, but gave a history of retained secundines for ten days. She was suffering so much pain, and was so sensitive to the touch, as to make any thorough examination without the use of anæsthetics impossible. I decided to try hypnotism, and after three trials developed a good subject. The experiment was so successful that I have concluded to use it in these cases whenever possible. I found in this case a generally disorganized condition of the pelvic contents, which required surgical interference, and was able to work unimpeded and assisted by the patient.

Hypnotic suggestion will enable you to have your patients place their body or limbs in any position you desire, and they will remain so until by suggestion you change their positions. In fact, you are able to do without a number of assistants. I had one patient who would, while being operated upon, assist in handing instruments, and even in sponging the wound at my suggestion, while, of course, being perfectly unconscious of the fact that he was himself the one being operated upon. The one great advantage hypnotism has over anæsthetics is the avoidance of the disagreeable after-effects, for the patient awakens as from a sound sleep. We also avoid all danger. This case of Mrs. S. was shown to a number of the leading medical men here, who made all possible tests as to her condition of

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* See Hypnotism *versus* Morphinism, by the author. Also cases quoted in *Am. Jour. of Inebriety*, January, 1892.

complete anæsthesia. I might add also that she was suffering greatly from insomnia. For this I would will her into a sound sleep at regular hours, the sleep to last from eight to ten hours. Finally I could from my office, some two miles from her residence, will her to sleep.

CASE II.—L. R., aged seventeen years. First came under observation in Paris. He was a page in a hotel. Seeing him several times a day, I soon found that he could be easily endormed. He complained of an ingrowing toe-nail. Putting him into a state of hypnosis, I found a very ugly toe, upon which I operated with ease to myself and unconsciously to the boy.

CASE III.—B. B., my office-boy, aged eighteen years. He is like a piece of clay in my hands, and offers so good a demonstration of the power of hypnotism that I have shown him before the profession here. To relate my various experiments with him would not be in accord with the purpose of this paper. Some of the experiments would read like fairy tales had they not been witnessed by responsible medical men. The only therapeutical use I have made of it with him was in seasickness. He suffered greatly coming out to America, and after allowing him to be sick for a day, so as to give it a fair test by the method of suggestion, I completely effaced any inclination to its return.

CASE IV.—This is a very interesting case from several points of view. Joseph B., lawyer, aged forty years, a very highly educated man, who, up to a few years ago, enjoyed a large and lucrative practice. Had been a temperate man up to his thirtieth year, when he began to drink moderately. It is the same old story—practice gone, friends lost, money squandered, self-respect nil. Doctors and asylums had been tried for years with no success. Hopelessly, yet as a last resort, he was sent to me. Fortunately, he proved a good subject. By suggestion I made him so weak that to move from his bed for six weeks was an impossibility. Meanwhile I would suggest hunger, and was able to nourish him rapidly. During the periods of craving for liquor I would put him in a state of hypnosis and tide over the period, giving him liquid nourishment, which was taken with the same gusto as would have been a cocktail. After six weeks of this treatment I would offer him liquor, suggesting the most disagreeable odors and tastes, and the glass would be thrown to the floor in disgust. Eight months have passed since he has tasted liquor; he is rapidly regaining his practice, and is now the pride of his family.

I do not state this case as a cure, as the time is too short to lay any great stress upon it; but I do not believe the patient will ever return to his old habits again, especially if I retain my present power and can see him frequently. A prominent factor in this case is that there is no family history of alcoholism.

I have found hypnotism useful in allowing painless parturition, also in nymphomania.

As I said at the commencement of this paper, I did not intend to give any more than plain facts. The therapeutical effects, theories, discussions, and the direct bearing that hypnotism has upon our profession from a medicolegal standpoint, I leave to those better qualified than myself to speak, admonishing them, however, to remember the question Socrates put to Theætetus:

"Are we, then, still pregnant and in labor, my friend, with reference to science, or have we brought forth everything?"

1126 N. CALVERT STREET.

THE
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THE PARIS HOSPITAL TREATMENT OF RHEUMATISM.

IN a recent article in the *Lancet* it is remarked that in Sir Thomas Watson's palmy days the student of medicine who answered a "green-room" question about the treatment of rheumatism by saying "Six weeks in blankets," and added something about giving drugs to suit the symptoms as they arose, was held to have answered well and wisely. But the introduction of the salicylate of sodium has changed all that.

The efficacy of that drug is well recognized in France also. A recent issue of the *Medical Press and Circular* contains in its Paris correspondence an account of the treatment of rheumatic troubles in the various hospitals of that city. Professor Bouchard employs salicylate of sodium, along with bicarbonate of sodium. Even after the apparent disappearance of the malady he continues for several days the use of those drugs in diminished doses.

Professor Strauss gives the salicylate in acute articular cases. He prescribes it in daily doses of from one to two drachms for men, less for women, in a potion of four ounces containing a little syrup and peppermint. The potion is given in two parts in the evening, at three hours' interval. He does not favor repeated small doses, for they seem to him to be much less prompt in their action. This treatment is continued so long as any fever or pain in the joints persists. After the acute symptoms subside the dose is diminished to twenty grains each evening. This is kept up for five or six days. If profuse sweating is produced, he adds a fiftieth of a grain of atropine. Dr. Strauss teaches that the salicylate is as nearly a specific for rheumatism as quinine is for intermittent fever.

Dr. Dujardin-Beaumetz is a strong partisan of this drug, except where a renal complication or pregnancy modifies the indications. He has had some experience with beta-naphthol in doses of five grains daily. He thinks well of the drug.

Dr. Millard regards salicylate of sodium as the drug *par excellence* for acute rheumatism. According to his view, it is one of the most valuable conquests of modern therapeutics, one of those results that astonish him most when he looks back on his student days.

Dr. Bucquoy gives two drachms of the same drug daily. No local treatment is considered necessary. The presence of albuminuria is a contra-indication to the use of the salicylate. He then uses uuiuine, antipyrine, or Dover's powder.

Dr. Barth regards the salicylate with favor, but does not use it in the cases of women who are pregnant, or in persons suffering from cardiac or renal affections.

Dr. Chauffard has noticed annoying cerebral symptoms following the use of salicylate of sodium, but not after that of antipyrine. He has fallen into the habit of using the latter drug, giving from thirty to sixty grains daily. The effects are rapid and not disquieting. Where the diaphoresis is excessive, sulphate of atropine is prescribed.

Dr. Vulpian has lately commended the use of salicylate of lithium. He regards it as more efficacious than the sodium salt in cases of acute and progressive subacute articular rheumatism. It even has some potency in chronic cases when there are painful, swollen, and misshapen joints.

THE URIC-ACID DIATHESIS IN CHILDREN.

It is well known that in infancy the urine frequently contains free uric acid, and that a deposit of urates is so common as to be almost regarded as normal. They may appear for a considerable time without producing appreciable symptoms. In childhood the continuous presence of uric acid is invariably accompanied by symptoms more or less distinctive. These symptoms are discussed by Sutherland in an interesting paper published in the *British Medical Journal* for April 23d. The subjects of this diathesis, he remarks, are often easily recognized. They have small, restless bodies, and are precocious, excitable, and nervous, at times bright and cheerful, at others quiet and depressed. They sleep poorly and wake early in the morning; they have dainty and capricious appetites. They take cold readily and perspire freely upon exertion. The feet and hands are usually cold. The pharynx is often relaxed and irritable, causing a harsh cough, most troublesome when the child goes to bed. The tonsils and the adenoid tissues of the naso-pharynx are subject to inflammation, and are frequently found thickened and enlarged. The tongue is coated and the breath foul, and frontal headache is very common. Abdominal pain is common, and is not infrequently located in the right iliac fossa.

When uric acid is being excreted from the system, pain is one of the most prominent symptoms, and may be located in any part of the urinary tract. If the irritation is in one or both kidneys, the pain may be located in the back, passing downward or forward, or it may be felt entirely in the umbilical region. This pain is usually intermitting in character, and may be intense. It is accompanied by nausea and shivering. When the bladder is irritated by the crystals or by the excessive acidity of the urine, the pain is suprapubic and reflected along the urethra to the meatus. The greater the proportion of solid to fluid constituents in the urine, the more marked will be the pain. It is a characteristic of the subjects of this diathesis that they drink moderately but sweat profusely, the result being that the amount of urine passed is small.

A NEW INSTITUTION FOR THE CARE OF INEBRIATE WOMEN.

A great step in advance has been made in the matter of the care of inebriates in New York State by the passage of chapter 467, Laws of 1892, at the last session of our Legislature. The act is as follows:

> Section 1.—The corporation known as Saint Saviour's Sanitarium, now established and existing in the city of New York, for the reception and reformation of inebriate women, is hereby authorized and empowered to receive and retain in its custody all such females as its trustees shall deem suitable subjects for its care, who may voluntarily surrender themselves, or who may be committed to its custody in the manner and for the term hereinafter provided, or for so much of such term as may be necessary in the judgment of such trustees for treatment and reformation.
>
> Sec. 2.—Any judge or justice of a court of record in the county or district where an alleged inebriate female resides may commit such female to such sanitarium upon the consent in writing of the trustees thereof, signed by their superintendent or executive officer, and upon the certificate in writing of two physicians, under oath, showing that such female is over the age of eighteen years, and is incapable or unfit to properly conduct herself or her own affairs, or is dangerous to herself or others by reason of habits of periodical, frequent, or constant drunkenness, induced either by the use of alcoholic or vinous or other liquors, or opium, morphine, or other narcotic or intoxicating or stupefying substance. But it must appear from such certificate that every physician executing the same is a graduate of some incorporate medical college, and is a permanent resident of the State, and has been in the actual practice of his profession for at least three years, and it must also appear upon the face of such certificate that the physicians executing the same have made a personal examination of the female alleged to be an inebriate, and that such examination has been had within twenty days prior to the application for the commitment. The judge or justice to whom any such consent and certificate are presented may require affidavits to be submitted in support of the allegations contained in such certificate, or may institute an inquiry and take proof as to such facts before making a commitment. No such commitment shall be for a longer term than one year, but the same may be renewed for a like term or terms upon a proceeding taken as hereinbefore prescribed in the case of an original commitment.
>
> Sec. 3.—Nothing herein contained shall be construed to limit the right of the courts to review by *habeas corpus* the detention of any person committed under this act.
>
> Sec. 4.—This act shall take effect immediately.

The advantage of this act is the power it gives to commit women who are confirmed drunkards, or who are addicted to the excessive use of any narcotic drug, to this new institution for a long period of time, for a year, with the privilege of renewals of the term of confinement.

The Episcopal Sisterhood of St. Mary has undertaken this new work, and St. Saviour's Sanitarium is now ready to receive patients. It is especially for the benefit of women of the better class, and the charges range up to fifty dollars a week; but in unusual cases—that is, of women of superior education and culture suffering from inebriety—the subjects will not be debarred from the benefits of this sanitarium because of lack of means.

The new institution is situated on Inwood Heights, in the northern part of New York city, overlooking the Hudson River and the surrounding country.

The officers are the Sister Superior, superintendent; Dr. Frederick Peterson, of No. 201 West Fifty-fourth Street, and Dr. J. W. Brannan, of No. 54 West Eleventh Street, visiting physicians; Dr. William H. Draper and Dr. G. H. Humphreys, consulting physicians; and Dr. A. J. Fulton, local attending physician. For further particulars and for blank forms application may be made to the Sister Superior, Inwood-on-the-Hudson, New York city, or to Dr. Peterson or Dr. Brannan.

PEROXIDE OF HYDROGEN.

The use of this preparation, so effectual in many conditions as a pus-destroyer, has quite recently been remarkably extended. It has not only been advised in the medical press and in society discussions for almost every morbid condition of the throat and nose, but has also been lauded by the daily press as a cure for various ailments and diseases of afflicted humanity. It has, as a natural result, been employed indiscriminately in large quantities, both in weak and in strong solution. Bad results are certain to follow such use even of a less potent drug. A note of warning against its indiscriminate use in the throat was recently sounded by Dr. A. Jacobi at a meeting of the American Pædiatric Society. A weak solution of the purest preparation will irritate some throats. In some patients it seems to possess the power of corroding the mucous membrane or of causing the formation of a thin pseudo-membranous coating. It seems also to have a decidedly detrimental effect upon certain diphtheritic throats, and marked improvement at once takes place upon its discontinuance. In view of facts recently reported by reliable observers, the conclusion seems inevitable that peroxide of hydrogen is a preparation to be used with extreme caution in the nose and throat.

MINOR PARAGRAPHS.

THE TREATMENT OF SNAKE BITES.

The March number of the *Archives de médecine navale* contains an article by Dr. Calmette, director of the bacteriological institute at Saïgon, Cochin China, on the use of chloride of gold in cobra poisoning. An abstract of the article appeared in the *British Medical Journal* for April 23d, and this abstract is quoted in the July number of the *Edinburgh Medical Journal*, which also alludes to a statement made in the *Therapeutic Gazette* to the effect that many cases are recorded in which the subcutaneous injection of a thirtieth of a grain of strychnine has proved successful in the treatment of snake bites. It appears that Dr. Calmette has performed fifty-two experiments with the venom of the cobra di capello on rabbits, guinea-pigs, rats, fowls, pigeons, dogs, and monkeys, and has drawn the following conclusions: 1. It is possible to cure animals suffering from the effects of snake poison by neutralizing the venom that has been absorbed by the blood with subcutaneous injections of gold. 2. None of the chemical agents hitherto recommended for the purpose (ammonia, iodine, nitrate of silver, etc.) can have any curative action, inasmuch as they can neither destroy the poison introduced into the wound nor neutralize that which has found its way into the circulation. A partial exception must be made in favor of permanganate of potassium, which has the power of destroying the poison in the wound, though it has no effect after it has been absorbed. Calmette thinks his results are applicable in the case of man as well as in that of animals. The first thing to be done after a bite has been inflicted is to stop the flow of blood through the veins as far as possible with an elastic ligature. From eight to ten cubic centimetres of a one-per-cent. solution of chloride of gold should then be injected with a sterilized hypodermic syringe into the wound itself and under the skin around it; but not more than one cubic centimetre of the solution should be injected at any one spot, in order to avoid too intense a caustic action on the tissues. Similar injections must also be given at the level of the ligature and between it and the heart. The injections may be given in any part of the body, either into the connective tissue or into the substance of the muscles. They cause neither eschar nor abscess if the solution of gold is titrated at one per cent. at the outside, carefully sterilized, and kept in a yellow or black glass bottle, so as to avoid the risk of decomposition under the influence of the sun's rays. The ligature may be taken off as soon as the injections have been given. Calmette thinks it probable that chloride of gold will also neutralize the poison of all venomous snakes, inasmuch as the chemical composition of all of them is, according to Weir Mitchell, practically identical.

GONORRHŒAL RHEUMATISM.

In a paper by Dr. L. Jacquet, in the *Annales de dermatologie et de syphiligraphie* for June, the author concludes that gonorrhœal rheumatism is not due to any one cause alone. The evident influence of depression of the nervous system; the frequent association with neuropathic troubles, such as various neuralgias, sensory disturbances, etc.; the clinical aspect of certain forms; the persistence of the pains, and their recurrence in persons who have recovered from gonorrhœa, in consequence of the single influence of nervous fatigue; and, lastly, the absence of micro-organisms in the purely sero-mucous swellings of the joints, legitimately suggest a neuropathic origin of these arthropathies. Perhaps they are due to the action on the nervous centers of a poison, a toxine, produced by the micro-organisms in the urethra. On the other hand, it is very probable that there is arthritis, and especially muco-purulent plastic arthritis, excited by the infection, the so-called "gonohæmia." And lastly, as is well known, there is arthritis caused by pyogenic microbes in cases of pyæmia, an instance of which is the rheumatism arising from pyæmic infection in ophthalmia.

THE TREATMENT OF WOUNDS BY AMBULANCE BEARERS.

On June 8th the Twenty-first German Surgical Congress convened at Berlin under the presidency of Surgeon-General Bardeleben. According to the *Lancet* for the 18th of the same month, the working of the army ambulance came up early and prominently for discussion. Langenbuch presented a paper advocating the early closure of wounds, either by suture or by plaster, on the ground that prompt attention by the bearers would result in bringing the wounded into hospital with a portion, at least, of the injuries in an aseptic condition, and therefore primary healing would be attainable to a greater extent than would otherwise occur. An opposite view was expressed by Esmarch, Trendelenburg, König, and Thiersch. They did not think very highly of the prospects of asepticism in the case of the materials used by the Red Cross men, or of the state of cleanliness of their hands, to say nothing of pieces of microbe-bearing clothing and other foreign matters carried into the wound by the missile. Thiersch gave vent to the dry, caustic remark, "We will keep the wound open and close the discussion!" The president took the hint and adjourned the session.

HYDROGEN PEROXIDE IN SURGERY.

The editor of the *Detroit Emergency Hospital Reports* expresses in a brief note his appreciation of the value of this drug. He says that a surgeon might as well attempt to do without his bistoury when treating an abscess as to manage phlegmonous erysipelas or purulent infiltration without the peroxide solution. He makes a number of small and deep incisions through the infiltrated tissues and then injects the 15-volume preparation, diluted with its own bulk of pure cold water. The tension of the diseased part disappears rapidly. The injected fluid finds its way into the connective-tissue spaces and antagonizes the products of inflammation to a considerable depth. The use of these injections must not be persisted in after the inflammatory tension has been relieved, "as they may retard the healing process by destroying the embryonal tissue as rapidly as it appears." This suggestion may serve as a caution to those who make prolonged applications of this powerful deoxidizing agent.

THE LEECH AS A MEANS OF SUICIDE.

The *Deutsche Medizinal-Zeitung* gives a brief account, founded on an article in the *Journal de médecine de Paris*, of a girl's suicide by means of leeches. She bought fifty leeches, took off all her clothing, and applied all the leeches to her thighs and the forepart of her trunk up to the breasts. As leech after leech dropped off gorged, she suffered the bleeding to go on. When she was found, the floor was drenched with blood and she was of wax-like pallor, although still breathing. She was taken to the Lariboisière in a very critical condition.

A SINGULAR ACCIDENT TO A PHYSICIAN.

The death of Dr. Charles C. Terry, of Fall River, Mass., formerly of New York, is reported as having taking place on Monday as the result of a thrust with a foil, the button of which was broken while the fencing was going on. The foil penetrated Dr. Terry's orbit, and he survived but a short time.

A NEW JOURNAL OF THERAPEUTICS.

The first number of the *American Therapist*, a monthly journal devoted to therapeutics, has just appeared. It is published in this city, and edited by Dr. John Aulde, of Philadelphia, who is well known as a writer on that subject. This number contains several practical articles, and we believe the scope of the journal is one that will appeal to many members of the profession.

SYMPHYSEOTOMY.

At a meeting of the Paris Academy of Medicine, held on the 28th of June, M. Tarnier showed a woman on whom he had performed this operation in her fourth pregnancy, for pelvic contraction. According to the account published in the *Union médicale*, the child was born alive, and no untoward consequence followed the operation.

ITEMS, ETC.

The Elimination of Bromide of Strontium.—Dr. Féré, at a meeting of the Biological Society of Paris, on June 4th, stated that the bromide of strontium (Paraf-Javal) which was administered to his epileptical patients was eliminated much more rapidly and in a larger quantity by the urine than bromide of potassium, and in his opinion this explained the absence of cutaneous phenomena of bromism so frequently observed with bromide of potassium. Bromide of strontium, besides, accumulated less in the system.

A Correction.—Dr. Lewis A. Sayre writes to us that in his article published in our issue for April 30th, on page 479, the name of Dr. Valentine Mott was incorrectly printed instead of that of Dr. A. B. Mott.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending July 19, 1892:

DISEASES.	Week ending July 12.		Week ending July 19.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	0	0	5	0
Typhoid fever	11	18	22	4
Scarlet fever	27	14	72	9
Cerebro-spinal meningitis	3	3	5	10
Measles	277	35	248	28
Diphtheria	54	27	84	23
Small-pox	5	2	12	0
Varicella	0	0	3	0
Whooping-cough	0	0	2	0

The Death of Dr. J. S. Green, of Elizabeth, N. J., occurred suddenly on the 1st instant. Dr. Green was an ex-president of the New Jersey State Medical Society and had only recently returned to his home from the last annual meeting of that body. He was the founder of the Elizabeth Hospital and a member of its staff as consulting surgeon. He was especially interested in orthopædic surgery. One of his papers on this subject was published in this Journal in 1881, at which time he took for his subject the treatment of club-foot by means of constant extension, and without tenotomy. He was a Princetonian by birth and education and a member of that very intellectual family which, for four generations, has been interwoven with the educational and forensic life of New Jersey. Dr. Green was sixty-three years old at the time of his death, which is reported to have been caused by cardiac disease.

The Death of Dr. Charles D. Scudder, by his own hand, on Tuesday of this week, deprived the New York profession of a most creditable member. The deceased was the victim of a sudden attack of mania. He was a graduate of the College of Physicians and Surgeons, of the class of 1878.

Change of Address.—Dr. J. W. Wright, to No. 143 West Eighty-first Street.

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from July 9 to July 16, 1892:*

Page, Charles, Colonel and Assistant Surgeon-General, is granted leave of absence for one month, with permission to apply for an extension of one month.

Middleton, J. V. D., Major and Surgeon, will, in addition to his other duties, take charge of the office and perform the duties of the Medical Director, Department of the East, during the absence on leave of Colonel Page, Medical Director.

Skinner, John O., Major and Surgeon, is granted leave of absence for four months on account of sickness, with permission to leave the Department of Texas.

Society Meetings for the Coming Week:

Tuesday, *July 26th:* Medical Society of the County of Putnam (annual), N. Y.

Wednesday, *July 27th:* Gloucester, N. J., County Medical Society (quarterly); Middlesex, Mass., North District Medical Society (Lowell).

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Letters to the Editor.

GONORRHŒAL RHEUMATISM IN EARLY CHILDHOOD.

26 East Sixty-second Street, New York, *July 11, 1892.*

To the Editor of the New York Medical Journal:

Sir: Permit me to relate in your valuable paper a case which a short time ago came under my notice. The relative rarity seems to warrant the publication. The patient was a female child, two years old. The mother, who brought her to my department at the Mount Sinai Dispensary on account of frequent and painful micturition, stated that she had noticed a discharge from the vulva and a swelling of various joints. On examination, there were found redness and swelling of the vulva and vagina, with a profuse purulent discharge from the urethra and vagina. The discharge was thick and yellowish green. On microscopical examination, it was found to contain characteristic gonococci.

The interest of the case does not, however, lie in the very tender age of the patient afflicted with gonorrhœa, but in the following complication: The right tarso-tibial joint was red and swollen, and the skin over the joint was tense. Any movement was extremely painful. There was also a swelling of the right sterno-clavicular joint of the size of a marble, extremely tender to the touch.

The affection of these two joints had been preceded, according to the statement of the mother, by an arthritis of the hands. The child was not particularly anæmic or lymphatic, and had never had rheumatism before.

The rheumatic affection yielded promptly to iodide of potassium internally and mercurial ointment locally.

The source of the gonorrhœal infection could not be ascertained. HERMANN GOLDENBERG, M. D.

A "CRAZY THERMOMETER."

NORTH MANCHESTER, IND., *July 12, 1892.*

To the Editor of the New York Medical Journal:

SIR: Some months since I read an article in a medical journal entitled A Crazy Fever Thermometer, and, as the form of lunacy described was different from that observed by me in a thermometer used in taking the temperature of Miss B. on February 14, 1892, I have concluded, though imperfectly, to place on record the phenomena then and there witnessed, and hope by so doing to elicit an explanation of this most unique condition. The thermometer in question had lost its register, or was "deranged," as the author of the article above referred to characterized it. Nevertheless, it recorded correctly, but had to be read *in situ.* In the endeavor to obtain the temperature of Miss B. the thermometer was placed under the tongue, and, after allowing it to remain for a sufficient time, I tried to read the temperature, but was surprised not a little to observe that the column of mercury was unsteady, recording now 101° and then in five or ten seconds 103°, in an equally small space of time again showing 100° F. I thought that perhaps the patient's position had something to do with such unusual behavior, and accordingly her position was changed from a left lateral to a dorsal one, but the observations were continued without any change in the result. So unusual was this that I called the girl's mother, an intelligent lady, to observe the strange conduct of the thermometer. I placed the instrument in the axilla, and we still observed the same instability. I knew full well that the thermometer had been perfectly reliable on all previous occasions, and, moreover, it continued to do its duty faithfully as long as I carried it, which was two or three months after the above-mentioned date. The patient was very nervous on this particular occasion, showing considerable muscular (fibrillary) contraction, with much vaso-motor disturbance, and I can truthfully say that I failed to reach a diagnosis in either case—that of the girl or that of the thermometer. I visited the patient the next day, and found an amelioration of all the symptoms and correct behavior on the part of the thermometer. She made a prompt recovery.

Now, the question that suggests itself to my mind is this: Are there electrical or other conditions of the body, not well understood, which can and do rapidly influence the body heat? Just here, I know of an explanation that will be offered, and, to preclude the necessity of so doing, I will say that mechanical friction had nothing to do with it, as shown by the following facts: First, I had another thermometer with me that retained its register, and it would record now high and then low, the degree depending on the time at which I took the temperature. While the self-registering one noted 103°, perhaps the other would indicate 101°. Second, I had the patient rub the tongue against the instrument freely, but no change could be observed that was fairly attributable to the friction. I should certainly be glad to learn whether others have noticed anything similar, and, above all, should like those "high in authority" to explain the cause or causes of such great and rapid fluctuations of temperature. I will say, in closing, that it is my belief that body heat in disease changes far more rapidly than most of us suspect, and that with self-registering thermometers we do not detect them. I am led to this belief by looking over the temperature charts of acute cases where the friends had been instructed to take the temperature every ten, twenty, or thirty minutes. The time is past when a physician in city or country can afford to treat an acute case, be it what it may, without furnishing the nurse or friends with a thermometer and carefully instructing them as to its use and having them keep a record of the temperature. Not only this, they must be put in possession of means of promptly and safely reducing it and keeping it to a safe degree when found undesirably elevated. T. A. LANCASTER, M. D.

THE SOCIAL EVIL.

129 WEST SIXTY-FIRST STREET, *July 14, 1892.*

To the Editor of the New York Medical Journal:

SIR: My object in this letter is to call the attention of our sanitarians and others interested to a new field of labor, wherein their efforts will be of incalculable value to the community at large. I refer to the social evil, the results of which are syphilis, scrofula, phthisis, and untold-of misery, the most virulent afflictions known to mankind.

One of the most serious questions of the day, interesting alike to the public and to the medical profession, is How can this so-called social evil be regulated? Abolished it never can be, for it has existed from the very beginning of society, and must endure to the end of time.

It may be of interest to recall the recent movement inaugurated by a prominent clergyman and his coadjutors, to show how inadequate their methods were to grapple with such a hydra-headed monster! The recent arrest, trial, and conviction of two poor unfortunate women was anything but beneficial to the cause which these so-called reformers began. The wholesale raids and arrests by the police officials likewise go to show the absolute want of any trace of system whereby this great evil might be checked. To attempt to lessen crime by such methods is useless and, it seems to me, but one of the many ways of opening up districts hitherto free from vices of this sort.

Let teachers of morality and religion join hands with physicians and sanitarians in using their vast influence toward the enactment and enforcement of a law regulating the practice of prostitution.

The awful prevalence of diseases arising from prostitution should encourage all those interested in this important subject to prevent, to a great extent, the spread of their terrible effects.

Can clergymen eradicate such diseases by means of the Bible or prayers? The wealthy man with his money, or the philosopher with his theories? I answer unhesitatingly No. We find that those people, religious or otherwise, who oppose the enactment of laws licensing prostitution are the very ones who do not understand the nature and prevalence of the awful maladies emanating from this vice, very often regarding them as visitations of Providence.

To "license shame," "encourage crime," etc., is not the object of any law regulating the practice of the social evil, but, on the contrary, to keep our present system alive is to license syphilis, scrofula, and phthisis. Moral teaching will not prevent the spread of contagious venereal affections, but a good law will, and it is a disgrace to our city and State that some sort of better regulation was not enforced long ago.

To imprison unfortunate women for plying their "trade," for such it is, is to my mind wrong. These poor creatures are driven to their doom. Natural depravity, uncontrollable sexual passion, and fondness for evil society or for dress, etc., are the lesser motives or incentives which induce young women to embrace lives of shame. Parents who neglect their children or are cruel to their daughters, the wiles of the seducer, poverty, and the impossibility of making an honest living are the principal causes that have placed these poor girls in their present predicament. They are recruited largely from the poor, and, having once fallen, there is no one willing to pick them up, to help restore them to virtue; but, instead, they become objects of scorn and contempt. Our so-called reformers have accomplished nothing, but they have succeeded in persecuting these "to-be-pitied" girls and women.

Something must be done to reform these people, and yet of far greater import is the absolute necessity of controlling the vice as it presents itself like a pestilence spreading disease in all directions. How carefully we guard against scarlet fever, small-pox, cholera, etc., but diseases which are sapping the very vitals of our existence are overlooked. Let us, then, unfold our arms and get to work. The late distinguished surgeon, Professor Samuel D. Gross, of Philadelphia, observes: "If prostitution were abolished, crimes of the most heinous and revolting character would be of incessant occurrence, and no virtuous woman would be secure from the assaults of the libertine." Being a necessary evil, the one great remedy is the making of a law licensing its practice. Such a course would be of immense benefit, promoting health and lessening the mortality from many diseases. The provisions of such a law should exclude city councils and city police authorities from serving on a board to be controlled exclusively by the commissioners of public charities and the health department. These boards should have the power of appointing medical men, with a liberal salary, to make inspections, at least twice a week, among the prostitutes, and every woman found to be diseased should at once be subjected to proper restraint till she was reported by her physician to be cured. Houses of ill-repute should be restricted to certain parts of the city, and then we should begin to appreciate the workings of such a law. In Europe similar laws have produced an immense amount of good. In Brussels, Berlin, Paris, and Vienna the diminution of venereal diseases has been most marked, and in the Ionian Islands, at Malta, and in the islands of Zante, Corfu, and Zephalonia, syphilis and other affections resulting from prostitution have almost disappeared. In Mexico and South America laws have been enforced with like effect.

Therefore, let all right-minded citizens co-operate in securing proper legislation, for many lives and much suffering and sorrow can be saved to the community by so doing.

Sebastian J. Wimmer, M. D.

Book Notices.

A System of Practical Therapeutics. Edited by Hobart Amory Hare, M. D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Assisted by Walter Chrystie, M. D., formerly Instructor in Physical Diagnosis in the University of Pennsylvania. Vol. I. General Therapeutic Considerations—Prescription-writing—Remedial Measures other than Drugs—Preventive Medicine—Diathetic Diseases and Diseases of Nutrition. Vol. II. Fevers—Diseases of the Respiratory System, Circulatory System, and Hæmatopoietic System—Diseases of the Digestive System. With Illustrations. Philadelphia: Lea Brothers & Co., 1892.

From a careful examination of these volumes we conclude that they, with their successor, will be a fitting complement to the *System of Medicine* that was recently published by the same firm. And as no such comprehensive work in English has been heretofore published, unless we except the translation of von Ziemssen's *System of Therapeutics*, it would seem that these volumes might prove very serviceable, for, as the editor has said in his preface, "the treatment of a disease is the one essential subject of study to which all others are subservient," and every physician is necessarily interested in a presentation of the latest therapeutic methods and a comparison of their effectiveness with that of others formerly in vogue. To no one is the admonition "Prove all things; hold fast to that which is good" more applicable than to the therapeutist, and the collated experience of many is necessary to secure proof of what is good.

The first paper in the first volume is by Professor Horatio C. Wood, and under general therapeutic considerations he discusses therapeutic methods, dosage, and the combination of drugs. Mr. J. P. Remington follows with a practical article on prescription-writing and the combination of drugs. Dr. Rockwell presents the subject of electro-therapeutics in a compact form for one who has written so extensively upon this topic. Dr. John K. Mitchell, in the article on the rest-cure for neurasthenia and hysteria, strikes the fundamental factor in that procedure, the necessity of the patients having faith in the doctor; aside from this, there are many details which, if unrecognized or omitted, may result in the failure of the method. Dr. Benjamin Lee's paper on Swedish movements and massage is complete; and his recommendation that the general, and especially the country, practitioner should familiarize himself with the proper application of these methods is justified by the range of their applicability. Dr. Hartwell's name is a sufficient guarantee of the character of the chapter on general exercise. In the chapter on climate Dr. Solly bases his recommendations upon statistical reports; and he advises that in selecting a climate for an invalid, not only should the applicability of the climatic factors to the disease be considered, but also the peculiarities of the individual and his attendant circumstances. We have come to regard Dr. Baruch as the archpriest of hydrotherapy in this country, and naturally expect to see his name as the author of the chapter on that subject. He describes the technique of hydrotherapy and the application of its various methods to different diseases. Dr. Sternberg reviews, under the head of disinfection, the various substances used as disinfectants and their application. Dr. J. William White has furnished a very interesting chapter on antisepsis and asepsis.

Dr. T. Burney Yeo's paper on nutrition and foods is one of the most valuable in the volume. He presents the principal conclusions regarding alimentation, especially in the morbid state and in convalescence, that are familiar to those acquainted with his work on this subject.

The longest paper in the volume is that on tuberculosis, by Dr. S. Solis Cohen, who begins by stating, with a subsequent qualification, that tuberculosis is a curable disease. To sustain this thesis the author goes into an elaborate consideration of his theories of the ætiology of tuberculosis, and considers *in extenso* the various methods and procedures that have been employed in treating this disease. We find several pages devoted to the now almost forgotten Bergeon treatment by sulphureted hydrogen rectal injections, and the author stands virtually alone in extolling it, as many excellent clinicians and therapeutists have found it useless. But few drugs that have been recommended in the treatment of this disease have escaped the author's attention, and his desire to do full justice to all have encumbered his pages with interesting but not invariably useful information.

Dr. Walter Chrystie has written a very well proportioned chapter on scrofulosis and rhachitis, following the usual plans of treatment for these conditions.

Dr. James Stewart furnishes an interesting paper on acute and chronic articular rheumatism, rheumatoid arthritis, and gout, presenting the usual therapeusis of the day.

The paper on scurvy, by Dr. John B. Hamilton, recounts some historical facts, but adds nothing to what has already been written regarding this disease.

In the final paper of the first volume, on diabetes mellitus, by Dr. F. A. Packard, we wish that he had elaborated his remarks on the uselessness of entirely prohibiting bread, as there are numerous methods of eliminating the risks of its ingestion. The therapeusis for this disease is that generally followed, with the addition of several valuable suggestions for complications.

The preliminary paper of the second volume is by Dr. R. W. Taylor, on syphilis. It is written in his usual pleasing style, and logically passes from the consideration of the abortive to the systemic, the interrupted, the general methodical, the fumigation, the hypodermic, the balneotherapeutic, the local, the special, and the regional treatment of the disease, with a final section on the treatment of hereditary syphilis. It would be of use to many physicians to read this chapter, and accept the author's dictum that by the early use of mercury we are treating before there is anything to treat.

Dr. J. Lewis Smith contributes the paper on scarlet fever, measles, rötheln, and varicella; and his advice regarding the prophylaxis and treatment of the diseases and of their complications is the fruition of his long experience.

The increasing prevalence of vaccination will, we hope, render frequent reference to Dr. W. H. Welch's paper on smallpox unnecessary. It can not, however, but prove serviceable to almost any physician at times.

In the paper on typhoid fever Dr. F. P. Henry considers, under the heading of prophylaxis, the conveyance of the infection by water, milk, air, and fomites. For the disinfection of stools he prefers chlorinated lime. The curative treatment is divided into hygienic, dietetic, and medicinal. Under the second heading we would commend his injunction to allow the patient an abundance of cold water, believing with the late Dr. John Forsyth Meigs that want of water is often the cause of death in this disease. While not recommending the so-called Brand treatment as universally applicable, he presents its advantages very fairly, and considers it superior to the antipyretic drugs. But his main point of attack is the intestine, and to secure intestinal antisepsis he strongly advocates the use of thymol, placing naphthaline next for this purpose. His paper is a very fair one in its consideration of the various methods of treatment, and is among the best in the two volumes.

Dr. M. Dominguez, of the city of Mexico, has written the paper on typhus fever, which, he states, is an endemic disease all over Mexico, appearing in epidemic form in the beginning of the summer and winter. A careful perusal of the paper leads us to believe that he describes typhoid fever, and the fact that his professional colleagues deny the contagious character of the disease supports this inference, as no doubt of the highly contagious character of typhus fever has ever existed in the minds of persons acquainted with that disease. It would be necessary, to decide on the character of the disease, to have a bacteriological examination of the blood and tissues made by a competent bacteriologist.

Dr. G. Dock has written the section on malarial diseases and dengue. We hope that he is in error in stating that the hæmatozoon described by Laveran is usually known by the name given it by Marchiafava and Celli, *Plasmodium malariæ.* These authors originally (1884) insisted that the organisms described by Laveran were degenerated forms of red blood-corpuscles; subsequently (1886), however, they described the same organisms under a new name, and endeavored apparently to belittle Laveran's discovery. The hæmatozoa are certainly a species of protozoa, while a plasmode is a phase in the development of the protozoa. We do not know on what authority it is stated that the flagellate bodies are the last to disappear, as Laveran found them present in only twenty per cent. of his cases. The name of the late professor of medicine of Tulane University is Bemiss and not Bemus, as written on page 349. The author's differentiation of the two classes of cases that have been included under the term typho-malarial fever is correct. Bacteriological examinations have shown the existence of the hæmatozoa and Eberth's bacillus in patients suffering from a continued fever. We recall the author's investigations on continued malarial fever in Texas as demonstrating that this was typhoid fever, and yet the "extraordinary conditions" causing adynamic malarial remittent fever are not altogether rare in the Mississippi Valley and have been recognized from the time of Drake's and Bartlett's classic publications. Regarding the useful subcutaneous injections of strychnine in pernicious malarial fever, sterilization of the water of the solution and of the syringe needle will avoid any unpleasant sequelæ. The author is quite right in his objections to intraparenchymatous injections in cases of enlarged spleen; we do not believe that any one who has once attempted this procedure will repeat the experiment, and for this condition there is nothing that surpasses the joint use of arsenic and mercury, as in Donovan's solution, for reducing even intractable enlargements. We believe ergotine is as useless in this condition as bromide and iodide of potassium are.

The well-known and able health officer of the State of Alabama, Dr. Jerome Cochran, contributes the paper on yellow fever, in which he first gives the procedure employed by several of the most prominent physicians of Havana, following it by the procedure employed in this country. We know of no better paper on yellow fever than this, and in the future it will be quoted from as La Roche's and Bemiss's papers have been in the past.

Dr. J. C. Wilson presents the various procedures that have been recommended in cerebro-spinal fever.

Dr. Ralph W. Seiss furnishes the paper on diseases of the nasal chambers. For the abortive treatment of acute coryza we have found acetanilide and a dose of morphine and atropine or of tincture of gelsemium prove more serviceable than all the local treatment he has recommended. We believe not enough emphasis is placed upon the employment of local remedies in chronic hypertrophic rhinitis; too many resort to the saw and cautery in all cases.

Dr. C. E. Sajous contributes the paper on diseases of the pharynx and larynx, and he has confined himself to the results of his own clinical experience in treating diseases of these localities.

Dr. J. Chalmers Cameron has written the paper on diphtheria and true croup, classifying the former disease as pharyngeal, nasal, laryngeal, ocular, cutaneous, and aural. Under the head of treatment he has simply tabulated a page of names of remedies that have been employed in treating this disease, adding in the subsequent text another page. Locally, he prefers peroxide-of-hydrogen spray, and internally tincture of the chloride of iron with free stimulation. He gives cautious assent to the employment of bichloride of mercury. He adopts Stern's views relative to the choice between tracheotomy and intubation, and devotes several pages to the operative procedures in each of these methods.

Asthma, acute and chronic bronchitis, and whooping-cough are considered by Dr. James T. Whittaker in his well-known thorough manner.

Dr. M. Howard Fussell furnishes a well-written paper on pulmonary emphysema, atelectasis, and abscess and gangrene of the lung.

Dr. Edwin E. Graham writes the paper on croupous and catarrhal pneumonia. He does not formulate any fixed treatment, but advises that each case be treated in accordance with its special features.

Diseases of the pleura are considered by Dr. Rudolph Motas, who has very thoroughly reviewed their ætiology and pathology. His review of thoracentesis and of the operative procedures in empyema is excellent, and this chapter is among the best in the two volumes.

Dr. W. H. Thomson furnishes the paper on acute and chronic organic diseases of the heart, coinciding in his therapeutical recommendations with the well-known writers on this subject.

Nervous diseases of the heart are treated of by Dr. T. Lauder Brunton, and he considers under this caption functional and toxic palpitation, tachycardia, bradycardia, intermittent pulse, and angina pectoris.

Dr. F. C. Shattuck has written the paper on diseases of the blood-vessels and of the blood. We are surprised to see omitted in his remarks on aneurysm any reference to the possibility of cure by continued rest in bed with the necessary massage and dietetic treatment. If Raynaud's disease is introduced here, why not the other angeioneuroses?

Diseases of the liver, gall bladder, hypatic ducts, and spleen is the title of Dr. J. H. Musser's paper; Dr. R. C. Norris writes on diseases of the thymus and thyreoid glands, and exophthalmic goître, and Dr. A. D. Blackader on diseases of the mouth and salivary glands, including mumps.

Dr. D. D. Stewart has handled the subjects of acute and chronic gastric catarrh, gastric atrophy, and gastric ulcer, cancer, and dilatation in a masterly way, and his paper is abreast of the latest work on these subjects.

Cholera morbus, cholera, cholera infantum, and dysentery are the topics of a chapter by Dr. Packard, and obstruction of the intestines that of one by Dr. Edward Martin.

Of course, peritonitis, appendicitis, and perityphlitic abscess are topics for a surgeon, and Dr. Roswell Park has very thoroughly presented them.

Dr. Charles B. Kelsey furnishes a very long paper on diseases of the rectum, more space being devoted to these diseases than to those of either the heart or the lungs.

Necessarily in a work of this character papers will be unequal; but where personal experience has failed, industrious bibliographical research has supplied the want, and the subjects have been thoroughly reviewed.

A Treatise on the Diseases of Women. For the Use of Students and Practitioners. By Alexander J. C. Skene, M. D., Professor of Gynæcology in the Long Island College Hospital, Brooklyn, etc. Second Edition, revised and enlarged. With 251 Engravings and 9 Chromo-lithographs. New York: D. Appleton & Co., 1892.

It is a little more than two years since the first edition of this work was published, and the demand for a second edition has caused the author to revise it and introduce some new matter and exclude some of the old. The statement on the title-page that the work has been enlarged surprises one who compares the two editions, as there is apparently but one more page in this than in the first edition; but at several places in the volume, where new material has been introduced, pages have been duplicated with asterisks. This saves repaging the old plates, but seems to us questionable as a matter of taste. Several new illustrations have been substituted for those in the former volume.

In the first chapter there is the addition of an illustration of Hunter's depressor and a few lines on its use.

In the second chapter there is the history of a case of double uterus, with an illustration.

In the fourth chapter the author has omitted his recommendation of Hewitt's pessary, though he still advocates the employment of Thomas's stem pessary for anteflexion, and recommends for the reduction of the uterine congestion and irritability, and for the habituation of the uterus to a foreign body in its cavity, the introduction of a sound after producing local anæsthesia by cocaine. This manœuvre is repeated as often as necessary until the tenderness disappears and the constant presence of the stem can be tolerated. While this may be a safe method in Dr. Skene's hands, we do not think that he has laid sufficient stress on the care that must be constantly exercised in this procedure, which has not the sanction of all gynæcologists. There is a typographical error that the reader will readily correct on page 67, which reads "the use of a retroversion pessary to draw the urine backward"; and on the same page, in the fourth line from the bottom, is the phrase "intra-urinary stem."

In the chapter on corporeal endometritis a few sentences on curetting have been substituted for the history of a case, but they are somewhat too general in character.

In the chapter on membranous dysmenorrhœa, antipyrine and salicylate of sodium have been added to the remedies recommended for the treatment of that condition.

In the chapter on retroversion some histories of cases have been omitted, and a too brief description of Brandt's method of massage, as well as a reference to Kelly's hysterorrhaphy—a loose and not descriptive term for what Tréat denominates hysteropexia—have been introduced.

In the chapter on diseases of the ovaries the section on chronic oophoritis has been slightly modified, so as to conform to the present ideas of the pathology of that subject. Some slight modifications have been made in the remarks on the causation of the disease, and two pages have been devoted to the consideration of its surgical and medical treatment. We hope that everybody will be impressed by the statement: "The clinical history of cases in which the ovaries have been removed does not, in all cases, show great advantage over those in which the ovaries are left to complete the natural history of the disease."

In the chapter on ovarian cysts the remarks on causation have been transferred to the section on pathology; and a section on intraligamentous ovarian cystomata is substituted for the tables on the diagnosis of ovarian neoplasms.

A section on the treatment preliminary to laparotomy has been added in the chapter on ovariotomy, and some changes have been made in the remarks on the after-treatment, as well as on the subjects of peritonitis and septicæmia after operations.

A section on laparo-salpingotomy is substituted for a case history in the chapter on diseases of the Fallopian tubes. We think this description is too meager, as there is insufficient detail in regard to meeting complications, and nowhere in the volume is the method of tying a Staffordshire knot described.

A section on hernia of the bladder is added that gives due credit to Dr. Mundé, and the operation of bringing together the muscular edges of an incision through the vaginal wall is briefly described.

The sections on urethral and vesico-uterine fistulæ have been rewritten.

In the chapter on diseases and injuries of the ureters their examination by inspection, catheterism, and manual or bimanual palpation is considered, as well as their obstruction from various causes.

In the few pages on ectopic gestation the employment of electricity is advocated if the diagnosis is made before rupture occurs, and, unless the latter is within the broad ligament, immediate laparotomy is recommended.

It will be seen that, while the additions have not been sufficiently extensive to make the volume a desideratum to those possessing the first edition, they have strengthened some parts of the work and made it more complete. While it is intended for students and practitioners, it is very apparent that the author expects that his readers will bring into action that agent that the artist Opie, when asked with what he mixed his colors, answered: "With brains!"

Reports on the Progress of Medicine.

PÆDIATRICS.

BY FLOYD M. CRANDALL, M.D.

Broncho-pneumonia.—Mosny (*Rev. mens. des mal. de l'enf.*, March, 1892), in an excellent paper on the causation and lesions of pneumonia in young children, considers the disease under two types: One he describes as a lobular pneumonia resulting directly from a bronchitis of the smaller tubes. It is frequently secondary to pertussis or measles. The other is designated as pseudo-lobar pneumonia, and the author believes it to be an acute lobar pneumonia modified by the conditions of childhood. In the true broncho-pneumonia the inflammation extends from the bronchi, where the process primarily begins, to the connective tissue of the bronchioles and accompanying arterioles and to the alveoli. The alveolar inflammation passes through three stages: first, splenification, marked by proliferation and desquamation of the epithelium; second, red hepatization, in which there is an exudation of fibrin, red blood-corpuscles, and leucocytes; third, gray hepatization, during which there is active exudation of leucocytes which replace the fibrinous exudation. Abscesses may result or resolution may occur while occasionally there is fibroid degeneration of the walls of the bronchi and alveoli. Emphysema and atelectasis are conditions secondary to these changes and result from mechanical causes.

From sixteen cases in which bacteriological investigations were made the conclusion is drawn that secondary broncho-pneumonia is due to one or two germs, and not to the pathogenic germ of the disease during the course of which the pneumonia has developed. In a large proportion of cases the germ is the *Streptococcus pyogenes*. In a few instances it is the *Pneumococcus lanceolatus* of Fränkel, and when these are found the type of disease is always the pseudo-lobar. These germs are sometimes found in the mouth and throat of children in perfect health. It is possible that infection is sometimes derived from this source when the vitality is reduced by other illness. The author, however, from long experience in the so-called isolating wards of a large hospital, believes that infection more commonly results from lack of cleanliness and from septic surroundings. In these wards where a number of patients suffering from the same disease are grouped together secondary infections are frequent and the mortality is very high. This may probably be overcome by disinfection and antiseptic precautions.

Catarrhal Pneumonia resulting from Infectious Enteritis.—Sevestre (*ibid.*) writes still further upon this subject. His work has already been noticed in this journal. He believes that in young children decomposition of the contents of the intestine may lead to the development of a fœtid diarrhœa and enteritis infectious in character. Systemic infection may follow this, during which pulmonary congestion and broncho-pneumonia may be produced. This is due, he believes, to a virulent *Bacillus coli* which finds its way into the lungs where it develops. These bacilli have been found in the lungs of numerous patients by Lesage. They have also been found in great abundance in the wards containing children suffering from infectious entero-colitis. This would suggest the propriety of isolating children ill with entero-colitis. These observations, it is proper to say, have not yet been confirmed by other observers.

The Spinal Column in the Infant.—Dr. Ballantyne continues his remarkable studies upon the anatomical character of the infant in the *Edinburgh Medical Journal* for April, 1892. The spinal column is investigated in three cases by the frozen-section method. Its comparative length during the early months of fœtal life is very great, but at full term it bears about the same proportion to the total height as in adult life. This is due not to the lower limbs but to the large size of the head. The dorsal region is about twice as long as the cervical; the lumbar region always somewhat exceeds the cervical in length. The great flexibility of the infant's spine is due to peculiarities in the vertebræ themselves and to weakness of muscular action. There are no fixed curves save that caused by the slight projection of the sacral promontory. This tends to form an anterior concavity or kyphosis. If the infant is encouraged to sit up at too early an age this natural and temporary kyphosis may become pathological and permanent. In the new-born infant the characters of the facets of the occipito-atlantoid articulations are not such as to permit of safe and extensive movements.

Types of Diphtheritic Paralysis.—Baginsky (*Arch. für Kinderheilk.*, xiii, 4, 5, 6) reports observations upon thirty cases of diphtheritic paralysis. He recognizes three types:

1. The paralysis appears early and affects the palate chiefly.
2. The paralysis appears later and is accompanied by aphonia more or less complete, cough, and dyspnœa due to involvement of the diaphragm. It is usually complicated by broncho-pneumonia. Death may result from sudden asphyxia.
3. This type is marked by weak and rapid pulse, with weak heart sounds, precordial pain, and marked involvement of the heart. This condition may exist alone or be an accompaniment of the other forms.

The Character of Diphtheritic Paralysis.—Arnheim (*ibid.*) believes diphtheritic paralysis to be due to parenchymatous neuritis. In eight autopsies upon children that had died from diphtheria complicated by paralysis he found hyperæmia and capillary hæmorrhages in the medulla, inflammatory processes in the muscles, and interstitial and parenchymatous degeneration of the nerve fibers.

Chorea.—Dale (*Lancet*, Nov. 7, 1891), after an extended discussion of chorea, arrives at the following conclusions:

1. Although chorea is best defined as a functional disease, it can not be called a symptom.
2. From the phenomena of hemichorea and its relation to hemiplegia we may assume that the seat of the lesion is in the sensori-motor ganglia at the base of the brain.
3. The disease frequently occurs after acute or subacute rheumatism, but many cases have no connection with rheumatism in any form.
4. The cases of chorea in which cardiac murmurs are found have for the most part been preceded by rheumatism, but this is not invariably true.
5. Certain children are strongly susceptible in certain nerve centers

which are easily influenced by psychical causes, and in these children chorea is very often developed.

6. In the great majority of cases complete recovery may be expected.

In treatment the author relies chiefly upon diet, the cold shower bath, iron, and arsenic.

Hysteria in Infancy.—Chaumier (*Semaine méd.*, Feb. 2, 1891) believes that certain neurotic manifestations of young infants are hysterical in character. Convulsions in children have usually been regarded as manifestations of a special disorder, which may result from indigestion, or may take the place of the chill or delirium in the adult. The author explains his somewhat novel theory by assuming that this is not always the fact. The apparent fits of passion without sufficient cause, accompanied by crying, he regards as the mildest form of this hysterical disorder. In other cases the child will stiffen the limbs, the face will become turgid, and the body will be seized with a distinct tremor. In a more serious form the child suddenly becomes quiet and seems for a moment to be unconscious. The mouth is open. The body usually becomes rigid. Occasionally there are no contractions, and the body becomes relaxed and limp. These attacks are usually known as fainting spells, and are frequent in children who later develop decided hysterical symptoms. In older children undoubted hysterical manifestations are not uncommon. The child faints or half loses consciousness, the limbs are often rigid, but may be relaxed, and the eyes are moved in a convulsive manner. Spasmodic movements sometimes occur, which may be mistaken for actual convulsions.

The Physical and Mental Condition of School Children.—Warner, in the Milroy Lectures for 1892, discusses this subject at great length and arrives at the following conclusions (*Lancet*, April 2, 1892):

1. It is practicable to inspect, report upon, and classify the children seen in a school by means of facts obtained from the teachers' reports. Evidence of scientific value may be thus secured of importance to the state, to education, and to philanthropic efforts.

2. The conditions of development and the nerve signs vary much in different schools.

3. Correlation of visible signs with low nutrition and mental dullness has in many cases been demonstrated.

4. The ill-made and feeble children tend to gravitate out of the better schools. The want of due provision for feeble children in day schools, and in many cases their exemption on medical certificates, tend to throw such cases upon the care of the state, and many become degraded.

5. Feebly gifted children, the paralyzed, and in some cases the epileptic may, in some instances and in limited numbers, be satisfactorily educated in day schools if better provision for them can not be afforded.

Albuminuria accompanying Diseases of the Skin in Children.—Canali (*Revue des mal. de l'enfance*, April, 1892) reports four cases of great interest. During the course of impetiginous eczema symptoms of acute nephritis suddenly developed, from which one child died. The urine contained casts as well as albumin.

In the same journal Felici also reports two very similar cases. A brother and sister, during the course of an eczema of the head which had been neglected, showed symptoms of nephritis, and the urine was found to contain albumin and casts. The boy recovered, but the girl was affected with eclampsia and coma, and died. The eruption was limited in extent and was apparently not sufficiently extensive to cause reflex disturbance of the kidneys. The theory is suggested that pathogenic germs gained an entrance by the eczematous surface, and by irritation or otherwise caused a parenchymatous nephritis.

The Prevention of Scarlatinal Nephritis.—Zeigler (*Berliner klin. Woch.*, Jan. 11, 1892), who has had a very large experience with scarlet fever, believes that the best prophylaxis of nephritis is a milk diet and rest in bed. During the early stages of the disease the milk is diluted, usually with Seltzer water. If the case is uncomplicated, but little else is given. When the acute stage is passed and the appetite begins to return, zwieback or rolls are added to the diet. No further diet is given for a period of three weeks. The amount of milk is limited only by the patient's appetite. Among 115 cases treated before the exclusive milk diet was used, over 50 per cent. suffered from renal complications. In over a hundred cases treated by the milk diet no nephritis was observed. In private cases, in which the milk diet could not be enforced for so long a time, farinaceous food was permitted.

An Ovarian Cyst in an Infant.—Beale (*Brit. Med. Jour.*, Dec. 12, 1891) describes a case of ovarian cyst in an infant six weeks old. The child became ill, with obstinate vomiting, high fever, and distention of the abdomen. The diagnosis of peritonitis was made and confirmed by autopsy. Purulent fluid was found in the abdominal cavity, and there were deposits of caseous lymph over the right side of the liver. Pus being discovered in the pelvic cavity, the uterus and its appendages were removed, when a cyst of the size of a filbert was found in each ovary. The walls of the cyst on the left side were very thin, but upon the right side they were thick and tough, and attached to them was the remnant of a ruptured cyst containing blood and caseous *débris*. This was clearly the cause of the peritonitis.

Ophthalmia of the New-born.—Dehenne (*Bulletin méd.*, lxxxiv, 1891) advises as a prophylactic of this form of ophthalmia a solution of corrosive sublimate (1 to 2,000) or a solution of nitrate of silver (gr. ijss. to ℥ j). One drop is to be instilled into each eye at birth. If the eyelids become tumefied, small pieces of absorbent cotton dipped in ice water should be applied constantly. Or a small piece of ice may be placed between two thin layers of cotton and kept upon the lids. This should not be continued when the tumefaction has disappeared. Frequent cleansing of the eye is of the greatest importance. All pus should be removed at least once every hour. A solution of eserine sulphate (gr. ijss. to ℥ j) should be instilled into the eyes night and morning. The conjunctiva of the lid should be touched once a day with cotton dipped in a solution of nitrate of silver (gr. xij to ℥ j). Stronger caustics should not be used, as they may produce sloughing.

Spina Bifida.—Fell (*New Zealand Med. Jour.*, January, 1892) reports two cases. In the first the tumor was very large and the walls were thin. The child was of low vitality, and died during the first day. In the second case the tumor was of the size of a small orange, and was located in the lumbar region. It was injected with Morton's iodoglycerin. This was followed by a tightening and hardening of the walls, which became somewhat inflamed. There soon occurred a discharge of thin, sanious fluid, having the odor of iodine. The walls rapidly shrank and left nothing but a small mass of tough skin to mark the site of the original tumor.

Inflammation of the Vulva in Young Children.—Comby (*Rev. mens. des mal. de l'enfance*, January, 1892), in a paper upon this subject, reports one hundred and fifty cases. The disease is due, he believes, in a large proportion of cases to contagion, usually, however, indirectly, as by sleeping with a person suffering from gonorrhœa or by using the same toilet articles or bath tub. Mechanical irritation is rarely a cause. Thorough cleanliness is the most effective prophylactic measure.

The disease manifests itself under two forms, acute and chronic. The latter is very stubborn to treatment, and active measures are often demanded. The parts should be carefully washed several times a day with a sublimate solution (1 to 2,000) or a solution of boric acid (1 to 25). After drying, powdered salol should be applied freely. When the vagina is involved very small crayons composed of cacao butter (fifteen grains) and salol (a grain and a half) should be introduced every second day.

Partial Obliteration of the Gall-bladder in a New-born Infant.—Dr. John Thompson (*Edinb. Med. Jour.*, June, 1892) reports a case remarkable for the large number of malformations presented. At birth the child was deeply cyanosed, and a loud, harsh systolic murmur was heard. There was no jaundice. Death occurred in twenty hours after birth.

The post-mortem examination showed the following conditions: The right ear was closely adherent to the scalp. There was harelip on the right side extending into the nostril and communicating with a complete cleft of the hard and soft palate. The hands showed a curious anomaly, the index fingers being parallel with the thumb, as if opposing the other fingers together with the thumb. The thorax was well formed, the thymus large. The great vessels had a completely fœtal conformation. The pulmonary and aortic orifices were each provided with two semilunar valves, which acted perfectly. The auriculo-ventricular valves were normal. The foramen ovale was closed by a loose membrane which, besides showing the usual opening, had numerous small apertures in it. There was an oval opening in the upper part of the interventricular sæptum, measuring two fifths by one third of an inch. The kidneys were irregular in shape and united to one another to form a "horseshoe kidney." The spleen was large and of dark color. The most unusual malformation was that of the gall-bladder, which was found lying in a mass of cicatricial tissue by which it was almost obliterated. The cystic, the hepatic, and the common ducts had thickened walls and small lumina, but were still pervious. The peritonæum covering the gall-bladder and adjacent parts was perfectly smooth and normal. There was no evidence whatever of syphilis either in the patient or in the family. The author believes that the peculiar condition of the gall-bladder was due to a chronic inflammatory process originating *in utero*, owing to the presence of a developmental abnormity which in some way exerted an irritating influence in its neighborhood.

Diphtheria and Loeffler's Bacillus.—Baginsky (*Arch. für Kinderheilk*, xiii, 4, 5, 6), among ninety-five cases of diphtheria, found Loeffler's bacillus in sixty-eight. Of these patients, twenty-seven died, and all had the disease in a grave form. Paralysis was common. In the remaining cases the bacilli were not found, although all the physical appearances of diphtheria were present. The illness was short, and but one child died. The conclusion is drawn that there are two diseases of marked similarity, which can only be distinguished by the microscope. The diphtheria which occurs with scarlet fever is not genuine diphtheria.

These two forms are marked by similar changes in the mucous membrane, and are accompanied by prostration, fever, and enlargement of the submaxillary glands. They are, however, very different in nature. The one due to the bacillus of Loeffler is very dangerous and fatal; the other, due to a streptococcus or staphylococcus, is not serious and rarely causes death.

Typhoid Fever in an Infant.—Fuller (*Lancet*, Jan. 9, 1892) reports a fatal case of typhoid fever in an infant of nine months. There had been marked irritability followed by dullness and accompanied by fever, diarrhœa, and tympanites. Others in the house were also ill with the fever. At the autopsy the mesenteric glands were found to be enlarged and Peyer's patches swollen, and some were beginning to ulcerate.

Creasote after Tracheotomy.—Soupault (*Rev. des mal. de l'enfance*, September, 1891) reports forty-five cases of tracheotomy, with forty-six per cent. of recoveries. This large percentage he attributes in great part to the use of creasote. Death after tracheotomy is due to broncho-pneumonia in a large proportion of cases. In some the broncho-pneumonia has developed before tracheotomy is performed. In others a pseudo-membranous bronchitis is present and pneumonia readily follows. In still others the membrane has not extended below the glottis. The author, hoped that as creasote was eliminated by the lungs, its free administration would be followed by a diminished tendency of the membrane to extend downward. It has been proved that this drug has considerable antiseptic power and a markedly beneficial effect upon mucous membranes. It was administered, therefore, with the hope of furnishing a condition unfavorable to the development of microbes. It was administered internally in full doses, and a solution in alcohol and glycerin (1 to 30) was placed on cotton over the tube. The results seemed to prove something in its favor.

Aphthous Stomatitis.—Allimier (*Rev. méd. de l'enfance*, January, 1892) considers the subject of stomatitis in children, as it results from the use of milk from cows affected with aphthous fever. Some have asserted that this is impossible, but facts presented by others—notably Ollivier—prove beyond doubt that it may occur. In 1765 Sagar reported an epidemic which was conclusive to his mind as to its origin. In 1834 three Prussian veterinary surgeons drank milk from cows affected with aphthous sore mouth, and after a short period were attacked with a similar eruption. Since that time cases have been reported by Delest, Proust, David, Nancara, and others. Chauvau observed an epidemic in a girls' school where the milk used was obtained from cows suffering from aphthous fever. If we can admit, with Monti, that the disease may result from the presence of alimentary substances in the mouth, or to changes in the secretions, or to the generation of irritating or poisonous substances in the mucous membrane, we may also admit that it may be transmitted by the milk of animals having aphthous fever. Observations by Chaumier seem to show that it may be transmitted from one individual to another. It is uncertain what the element of contagion is. Fränkel found the *Staphylococcus pyogenes citreus* of Passet and the staphylococcus of Rosenbach, but these show nothing of a specific nature. As to transmission by milk, it is possible that it results from spores rather than from the bacteria themselves.

Miscellany.

Oatmeal Pyrosis.—The author of the *Asclepiad*, Dr. Benjamin W. Richardson, says in a recent number of that publication:

"An obstinate case of pyrosis came under my care some years ago, and resisted all forms of medical treatment. The dietary of this patient, an orderly and temperate man, seemed to call for little supervision; in fact, I never remember to have had under my care any one who was simpler or more methodical in the way of feeding and drinking. I recommended him to leave off tea, and he obeyed, but with no beneficial result. Coffee was withdrawn, with no better result. The patient was an abstainer from alcohol and did not smoke, so reforms were not called for in those directions. For a time he left me and consulted another physician, I believe more than one, but after a few months he returned, complaining of the continuance of the symptom that so oppressed him. He really suffered acutely. Each morning, between breakfast-time and luncheon-time, the water brash came on. The quantity of fluid ejected from his stomach was considerable, and the ejection was preceded by a sense of sinking at the heart and faintness which sometimes alarmed him. By the free discharge of the fluid from the stomach he was invariably relieved, and rarely had any return of symptoms until the following day.

"The story of the repetition of the attack, always at the same or about the same hour, was so peculiar and so often repeated, I could not fail at last to attribute it to something taken at breakfast; and finally I began to suspect that a dish of oatmeal porridge might be the enemy. He had taken this for breakfast for many years, and had never thought it injurious, and when I named my suspicion he was incredulous. However, he took the advice to leave off oatmeal 'on trial,' and from the day of leaving it off had no return of his symptoms. Six months later he ventured the oatmeal diet again, and in a week was as bad as ever. Once more he left it off, and once more was completely cured. This was observation on a patient; but, for experiment's sake, I tried the effect of oatmeal diet on myself, with the result of setting up in a few weeks as decided an attack of pyrosis as could be observed or felt. In my own case I found that barley-water, repeated for a time, produced the same result.

"After making these observations I continued to inquire, in all instances of pyrosis I have since met with, whether oatmeal formed a part of the dietary of those affected; and I have found so many corroborative experiences, I am led to think there is no more frequent cause of pyrosis than oatmeal or a similar fermentative food."

The Alleged Gold Cure of the Drinking Habit.—The *British Medical Journal* for July 2d publishes a letter from Dr. Keeley in which he says:

"I am an American physician of thirty-two years' standing, and I am still on the roll (*sic*) of Physicians in the United States in actual practice. I also hold the important appointment of surgeon to one of the greatest railroads in the United States—the Chicago and Alton. My work in the treatment of drunkards has always been open to all medical men who have done me the honor to ask for admission to my institute as scientific observers. From 1,500 to 2,000 physicians have submitted themselves to my treatment in their own persons for the drink crave, and with nothing but advantage to their own health and habits.

"I am now here at the request of Englishmen who have asked me to come over and assist in establishing an institute in London such as that which I have myself carried on at Dwight, Illinois, for thirteen years. The statements which have inspired your article are not true. I do not profess to enable a wasted life to be born again, nor do I profess to be able to renew shattered nerves or ruined viscera. All that I profess to do is to remove the drink crave by a very remarkable effect which I have discovered and which is just on a parallel to the antagonism well known to exist between arsenic or quinine and the malarial habit. Not long hence I hope to appeal to the profession in that form which they consider the proper one, and to publish my remedies in full detail, thenceforth to take their place in the history of medical science; but at present I do not propose to take that course. At this moment I only say that my remedies do contain gold, and that your information on that point is as misleading as it is on other points.

"There is one fact which I can not understand, and therefore can not explain. I learn that Dr. Norman Kerr found it his duty to convey to Bishop Barry information which led him to reconsider his arrangements to take the chair at a meeting on this subject at the Westminster Town Hall. Such action on the part of Dr. Kerr I can not explain, because (1) this course was taken behind my back, which is not a course usually taken by gentlemen; (2) in July last, when I was in London, Dr. Norman Kerr did me the honor to call upon me three times; he presented me with copies of his works on the subject of inebriety, and he paid me nothing but compliments. Under these circumstances I can not understand Dr. Kerr's course of action. I will only add that if Dr. Kerr has any statement to make on the subject of my work or of my remedies, there could not be a better medium than the *British Medical Journal* in which to pillory me for my iniquities. I am now in London, and am ready to answer him, or any one else."

The editor of the *British Medical Journal* sent a copy of Dr. Keeley's letter to Dr. Kerr, and received from him the following comment:

"The information which I conveyed to Bishop Barry had reference to the prospectus of a syndicate which I had seen, seeking to raise £150,000 to purchase the right to use the 'gold cure' in the United Kingdom. This action was taken after consultation with representative members of the medical profession who, like myself, were deeply concerned for the good name of our esteemed bishops and of the Church of England Temperance Society. The only going behind the back of any one was when some person or persons used the name of the Church of England Temperance Society, and secured the chairmanship of a prelate 'behind the back' of medical members of the society, who surely ought to have been the first persons to be consulted in such a matter. Some of those individuals who assembled at the place where the postponed meeting was to have been held were told that the chief proprietor of the 'gold cure' had nothing to do with the gathering. Now, that gentleman lets the cat out of the bag in complaining that certain information relative to the meeting was conveyed 'behind my back.' I certainly saw that gentleman once, *not* at my initiative. Not only did I not express any approval of his procedure or 'cure,' but, after listening to all he had to say, I told him plainly that neither I nor any other respectable member of the profession in Britain could have anything to do with a proprietary secret remedy. I also pointed out that it was the duty of honorable medical practitioners to place the details of their treatment openly and unreservedly before the profession. The composition and results of this and other so-called 'cures' for inebriety are subjects of discussion in scientific medical societies and circles. The 'gold cure' must now take a back seat. Ninety-five per cent. of 'cures' are claimed for it. A rival American proprietary 'cure' guarantees one hundred per cent. of 'cures,' and offers to return the money to all who have complied with the conditions and have not been cured."

The *Journal* itself thus comments on the matter under the heading of Nostrums for Inebriates: "We publish in another column a letter from the physician who claims the parentage of the 'gold cure' for drunkenness. This gentleman claims, it will be seen, a somewhat smaller percentage of 'cures' than do the proprietors of some other secret nostrums who go so far as to avow the principle of 'no cure, no pay.' The chief proprietor of the 'gold cure' announces his intention at no distant time to appeal to the profession in what is considered 'the proper manner.' He has had a good many years to consider the advisability of doing so. The proper manner is to state what his 'cure' is, and how it is to be used; but that might interfere with the operations of the syndicate, who, Dr. Kerr intimates, are asking the modest sum of £150,000 for their secrets. A long and melancholy experience of these secret cures should by this time have taught mankind how to estimate such claims at their true value. The antagonism of strychnine and belladonna to inebriate craving is no secret, and the profession have had the means of studying the limits of its usefulness. If Dr. Keeley has any other antagonism to disclose it will be to his credit not to delay taking the 'proper means' of making its name and nature known. Thus far his methods are not those which an honorable profession can countenance. The very name given to the 'cure' breeds suspicion, for experience of the double chloride of gold and sodium has not shown it to possess any such antagonism. Moreover, we are informed that in the report of the committee on nostrums, proprietary medicines, and new drugs, presented to the American Association for the Study and Cure of Inebriety, on December 4, 1890, published in the *Quarterly Journal of Inebriety*, Hartford, Conn., U. S. A., Dr. S. W. Abbott, Health Officer of the State Board of Health of Massachusetts, stated that the report of Dr. F. Davenport, the State Analyst, gave 'the Keeley double chloride of gold cure' as showing no reaction indicating the presence of even a trace of gold. It is possible that this is not always so, for secret preparations are not always necessarily identical or uniform in composition. Thus the 'cure' comes before the world tainted with a manifold suspicion from the mercenary and speculative character of the financial proposals which accompany its introduction into this country; from the concealment of the 'menstruums' in which the chloride of gold (if any) is suspended; from the discord between the published analyses and the market name of the nostrum so highly vaunted; and from the striking failures and deaths among the very 'cures' heretofore most prominently boasted. The element of 'secrecy,' however, if not professional, may prove profitable to Dr. Keeley, as it has to Holloway, to Morrison, and to other secret medicine venders. *Omne ignotum pro mirifico* is a maxim of which the venders of well-puffed proprietary nostrums have always had an affectionate estimation; and Carlyle's census of the fools encourages them to maintain it. Some men who ought to know better will, no doubt, be caught by the philanthropic verbiage with which the bargain is clothed."

Virchow on the Prevention of Sexual Diseases.—At a meeting of the Medical Society of Berlin held in May the subject for discussion was the repression of syphilis. Professor Virchow entered into the debate with all his usual spirit and decision. He advised, first, that his hearers acquire a clear idea of what precise thing it was that society needed. The cry generally was for more stringent regulations against prostitution. This, to his mind, was too narrow for medical men to discuss; they must consider the curtailment of syphilis, and they must take care to keep within the bounds of actuality. The view of some authors that syphilis was as old as the human race was, in his opinion, pure fancy. He had examined all the writings and alleged proofs regarding the early origin of venereal disease. It was not sufficient, he thought, that expressions could be found in this or that ancient poet, or this or that pornographist ancient or modern, showing that the writer was cognizant of a diseased condition of the genital organs, and then straightway assume that syphilis was the disease mentioned. Simply to conclude that every antique case of sexual trouble was a venereal one was going too far. He had sought with great zeal to solve the problem of how far the existence of syphilis in the centuries long ago could be proved by the absolute relics that remained to us. But not a bone had he seen from prehistoric quarries which enabled any one to date back that disease beyond the time of its comparatively recent advent into southern Europe. Of the period before the voyages of Columbus not a single bone had been produced that substantiated the theory of the very early origin of that malady. In recent times search had been repeatedly made in Peru, for example, in order to discover syphilis in the grave-bones of the older races. Careful examination had shown a form of hyperostosis, but nothing more. This had been met with, however, in the cave bear and other inferior animals also, and was a manifestation of "cave gout." The old troglodyte also showed the same changes in the bones, which did not go beyond those of the disease that we now call arthritis deformans. This had no tangible connection with syphilis, and was, in his opinion, an independent disease. It was remarkable, said Virchow, as quoted in the *Medical Press and Circular*, that from the moment when the European peoples began to undertake sea-voyages, when the Spaniards and Portuguese especially began their voyages of discovery in the South Sea and the Indian Ocean, syphilitic bones were found in the graves in the Indies and New Caledonia, but he had never been able to discover a single such object originating in the times before the great sea-voyages, neither with our predecessors, nor with the ancient Egyptians and savage nations. So that the existence of syphilis earlier than the sixteenth century must remain in dispute. Humanity and syphilis were not inseparable. Preventive medicine did not need to cope with any argument, however poor it might be, that it was useless to attempt to hinder the transmission of venereal diseases because they were coeval with man.

Virchow held that the formation of new laws of a practical character might be undertaken, limited at first to the betterment of Berlin. He had already endeavored, in the discussions of the Reichstag, to show that the insurance laws, for example, should be aimed not to make men moral but to make them healthy. The existing German insurance acts provided that insurers who "intentionally brought their illness upon themselves" by sexual excesses could not claim full sick-pay. The person concerned did not infect himself because it was his intention of doing so; his intention was simply to have sexual intercourse, and, if he contracted syphilis in so doing, that was not shown to be a part of his intention. A single sexual act could not be described as sexual excess. If any man had an infected wife and had the misfortune to contract the disease from her, it could not be made to depend upon excess. Medicine must, therefore, treat men as men, disregarding their various moral, social, and political qualities. The greatest of criminals, when ill, could always obtain conscientious medical assistance. Governments had need of a greater degree of liberality in providing for the sick of this class. Society would be benefited when this was done, for one of the best means of reducing the dangers of the spread of these diseases would be by offering to the victims every inducement to have early recourse to treatment. But the reception of syphilitic cases was expressly prohibited in some hospitals—that of Urbau, for example. Other hospitals had so little room to spare for these cases that they could take a part only of the patients that presented themselves. There had been a desire in Berlin to associate poliklinics with the existing institutions, and to treat syphilis by means of those. There was also some intention of enlarging the Moabit Hospital, so that a poliklinik might be conducted for the relief of venereal patients. But this proposal had been negatived in the supposed interests of the junior members of the medical profession, although all such matters could be settled by compromises. The first position for medicine to take in these questions was to declare in favor of bringing the sick under treatment as early as possible, and that as far as possible they should be treated within the walls of hospitals or in wards set apart for these specific ends. Moral and financial considerations were, to the medical eye at least, distant and secondary in importance.

The Dublin University Tercentenary.—Dublin during the second week in July has been *en fête* in consequence of the celebration of the tercentenary of the University of Dublin. Visitors have been received from all parts of the world, and appear to have most thoroughly enjoyed their visit. On the 5th of July the proceedings commenced by the guests, delegates from universities, graduates, and corporate bodies walking in procession in academic or official robes from Trinity College to St. Patrick's Cathedral. During the week there were three garden parties—one in the Fellows' Garden, another at the Viceregal Lodge, and the third at the Royal Hospital, Kilmainham—two banquets, a university ball at the Leinster Hall, and a reception at the Mansion House. Dr. Kidd, president of the Royal Academy of Medicine, also gave an entertainment at his residence in Marion Square to a large and distinguished company. A tercentenary ode was performed by the University Choral Society, and there was a dramatic performance at the Gaiety Theatre, the play of *The Rivals* being acted chiefly by the undergraduates. On the 6th the honorary degrees were conferred by the University on the following-named persons among others: Doctor of medicine, John Shaw Billings, of the United States Army; doctor of sciences, Othniel Caleb Marsh, of Yale College, and Simon Newcomb, of Washington; doctor of laws, Francis Amasa Walker, of Massachusetts; doctor of letters, Isaac Hollister Hall, of New York, and Joseph Henry Thayer, of Cambridge, Mass. On the 7th another street procession took place from the college to the Leinster Hall, for the presentation of addresses by the delegates to the University of Dublin. The following were the American representatives: Johns Hopkins University, Dr. D. C. Gilman, president, and Professor S. Newcomb. University of California, Professor W. Carey Jones. Columbia University, Professor H. J. Peck. Cornell University, Professor Hiram Corson. Harvard University, Professor W. G. Farlow. College of New Jersey, the Rev. F. L. Patton, president. University of Pennsylvania, Dr. J. S. Billings, Professor E. J. James, and Professor W. R. Newbold. Yale University, Professor T. R. Lounsbury and the Rev. J. H. Twichell. National Academy of Sciences, Washington, General F. A. Walker. Smithsonian Institution, Dr. James C. Welling. On the 7th the honorary fellowship of the Royal College of Surgeons was conferred on Dr. Billings.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

THE NEW YORK MEDICAL JOURNAL, July 30, 1892.

Original Communications.

SURGERY OF THE GALL BLADDER.*

By CHARLES T. PARKER, M. D.,
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The subject of my article is the indications for operation in the surgical treatment of diseases of the gall-bladder and the biliary passages. My interest in this subject is due to the flattering results reported of late by eminent operators in this branch of surgery, as well as my own experience in the after-treatment of a number of these cases.

It is a striking and interesting fact, in reviewing the literature on this subject, to see how the experienced operators of the present day are striving to replace the old operation of cholecystostomy by a number of new operations, each more applicable to the condition to be relieved, and with a mortality differing but slightly from it.

With the results so far obtained it is fair to believe that the operative surgery of the future will not be included under cholecystostomy as in the past, but that many new methods will be introduced, each of which will have its special application determined by a more searching digital exploration at the time of operation (a thing much neglected in the past) as well as upon a more intimate knowledge of these diseases and the results of the various methods now practiced.

On account of the number of operations which we are to consider and the numerous indications necessary in their performance, I have determined to speak of them under two headings:

1. Where the disease or obstruction exists within the cystic duct or gall-bladder.
2. Where it exists within the common duct. This division I make because it is a practical one in its application.

If in the performance of an operation we find that the seat of the disease exists in the cystic duct or gall-bladder, we think of the operations of cholecystendysis, cholecystectomy, cholecystotomy with adhesion of the sutured gall-bladder to the abdominal wall, lithotripsy combined with cystotomy, and, lastly, cholecystostomy. If, on the other hand, the obstruction or disease exists within the common duct, we naturally think of choledocho-lithectomy, choledocho-lithotripsy, cholecysto-enterostomy, and a "provisory" cholecystostomy.

With such a division as this the surgeon, after the incision of the abdominal wall and an investigation of the conditions existing within the gall-bladder and the ducts, can select at once which of the operations is indicated.

The first and oldest of these operations, cholecystostomy or the formation of a fistula connecting the gall-bladder with the integument, is an operation too often performed without a clear knowledge of the conditions existing in the ducts. The operation has been too frequently performed for the purpose of relieving a distended gall-bladder *per se*, trusting that the relief given this viscus will correct whatever condition exists of which the operator may be entirely ignorant. It has its special place, however, in treatment; but is to be limited in its use to the few cases where ideal operations are contra-indicated by existing mechanical difficulties. This operation has the great disadvantage of leaving an unnatural opening which may remain for a long time, and in a few cases indefinitely, as a fistulous tract excreting either bile in large or smaller quantity or pus and mucus.

When the cystic duct is closed, pus or mucus is constantly excreted in moderate quantity. When the cystic duct is open and the common duct is closed, bile is constantly excreted. Bardenhauer, Tait, Bernays, and Kocher consider the existence of such a fistula neither an inconvenience to the patient nor dangerous in its effect.

Although exceptional instances do exist where the long-continued loss of bile has been borne without a depressing influence, a complete and long-continued biliary fistula in the majority of cases leads to a rapid loss of flesh and complete exhaustion (Courvoisier).

The position of the adherent gall-bladder after this operation has given rise to intestinal incarceration in more than one instance, and by changing the natural Y-shaped position of the hepatic, cystic, and common ducts in other instances has produced a permanent biliary fistula.

The adhesions existing between the gall-bladder and the abdominal wall destroy the relations of the hepatic and cystic ducts to one another so that they are converted into one straight channel, and produce at their point of juncture with the common duct a valvular fold occluding the latter. For this reason bile from the hepatic duct flows directly into the cystic duct and thence into the gall-bladder more easily than into the common duct, its natural path. This changed relationship of the ducts after this operation is, under some conditions, an important objection to its performance (Courvoisier).

The mortality of cholecystostomy performed at two operations is the slightest of all of these, but cholecystostomy in general is not more fatal than cholecystendysis, and is only one thirtieth less than cholecystectomy.

Cholecystostomy, however, is pre-eminently the operation to be performed in cases where an intimate adhesion of the gall-bladder to the liver and intestine, or extensive hæmorrhage during the attempt at the removal of the gall-bladder, contra-indicates cholecystectomy, or where an extensive disease of the gall-bladder contra-indicates cholecystendysis.

Again, in the weak or aged, where any operation of moment would not be admissible, cholecystostomy is the only operation the surgeon would be justified in performing.

Cholecystostomy should be performed as a provisory operation to a subsequent cholecysto-enterostomy in cases where an obstruction exists in the common duct, and the patient is exhausted from a prolonged and well-marked cholæmia.

In a general way we are to consider cholecystostomy as the operation to be performed only in cases where cholecystectomy, cholecystendysis, and cholecysto-enterostomy can not be done, since it does not secure an absolute freedom from further attacks of cholelithiasis, and directly exposes the patient to the dangers resulting from a fistulous tract excreting bile, pus, or mucus, as well as to the complications which may result from adhesion of the gall-bladder to the abdominal wall.

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* Read before the Hospital Graduates' Club, February 25, 1892.

In cases where the walls of the gall-bladder have become very thin, or where an excessive thickness is present, an operation recommended by Langenbuch seems to be a preferable one to cystostomy or cystendysis. This operation consists in the application of a proper suture to the cystotomy wound and a union of the sutured gall-bladder to the abdominal wall.

The objection to this is seen in the adhesion of the gall-bladder to the abdominal wall and the dangers which may possibly arise from it.

It has in its favor, however, the fact that no fistulous tract remains, and therefore no chance for a subsequent infection, and under the conditions existing in the wall of the gall-bladder this is probably the safest method of treatment, provided that cholecystectomy can not be used.

Another operation which has of late been used is that of cholecystendysis, or the operation of dropping back the gall-bladder into the abdominal cavity after the suture of the opening made into it for the relief of its contents. This operation shows a mortality of only one in six cases, and so far no rupture at the point of suture has taken place, nor has there been an escape of the contents of the gall-bladder, except in one instance where the selection of the case was admitted by the operator himself to be a faulty one.

The principal indication for this operation is the existence of a severe cholelithiasis with the walls of the gall-bladder in a relatively normal condition and the cystic duct pervious. These are the essential points in the selection of this operation. The contra-indications to this operation would therefore consist, in the first place, in a marked disease of the wall of the gall-bladder, and, secondly, in a closure of the cystic duct from any cause whatever.

Where these latter two conditions exist, cholecystectomy is to be preferred to cholecystendysis. In case the surgeon should consider it unwise to perform cholecystectomy, he has still another refuge in the modification of cholecystotomy already mentioned, Langenbuch's, or in the operation of cholecystotomy with ligature of the cystic duct (Zielewicz).

The character and degree of the disease in the walls of the gall-bladder and cystic duct, together with the condition of the patient at the time of the operation, will always render the proper selection of any one of these operations a difficult matter.

Cholecystectomy, or the removal of the gall-bladder, is an operation in which the danger has been greatly overestimated. In the hands of skilled operators in this branch of surgery the mortality has of late been greatly reduced. Tait gives the mortality as being fifty per cent., whereas it has been reduced at the present time to one in five cases.

It is an operation which, when indicated, is not only easier, but more quickly performed than any other operation upon the gall-bladder. As no disturbance to the health of an individual results from the removal of the gall-bladder, no objection can be raised to a method of treatment which once for all does away with recurrent attacks of cholelithiasis and leaves no fistulous tract. Long-continued and severe cholelithiasis, hydrops due to closure of the cystic duct, either by stones or strictures, severe diseases involving the walls of the gall-bladder—such as empyema, ulceration, contraction, and carcinoma—belong to the class of cases in which this operation is demanded.

Again, internal rupture or wounds of the gall-bladder, where a simple suture is not possible, are to be treated by cholecystectomy. On the other hand, it would be injudicious to attempt this operation where severe adhesions bind the liver to the other organs in the neighborhood, particularly the intestines, as well as where a closure of the common duct exists which can not be relieved by choledocho-lithothripsy or choledocho-lithectomy. Under such conditions it is absolutely contra-indicated, and must be replaced by cholecystendysis or cholecystostomy, or possibly cholecysto-enterostomy.

The operation of lithotripsy, which consists in crushing the stone through the walls of the ducts either by means of the fingers or by instruments devised for that purpose, is one which only in exceptional instances is to be performed alone. It is always to be combined with an incision, except where the fragment can be crushed and pushed into the duodenum. If the stone exists in the cystic duct, lithotripsy is to be combined with cholecystotomy so that a vent may be given to the detritus pushed into the gall-bladder. If the stone exist in the common duct, the crushing of the stone must be complete and all the detritus must be pushed into the duodenum in order that no new stone may form at the site of any left.

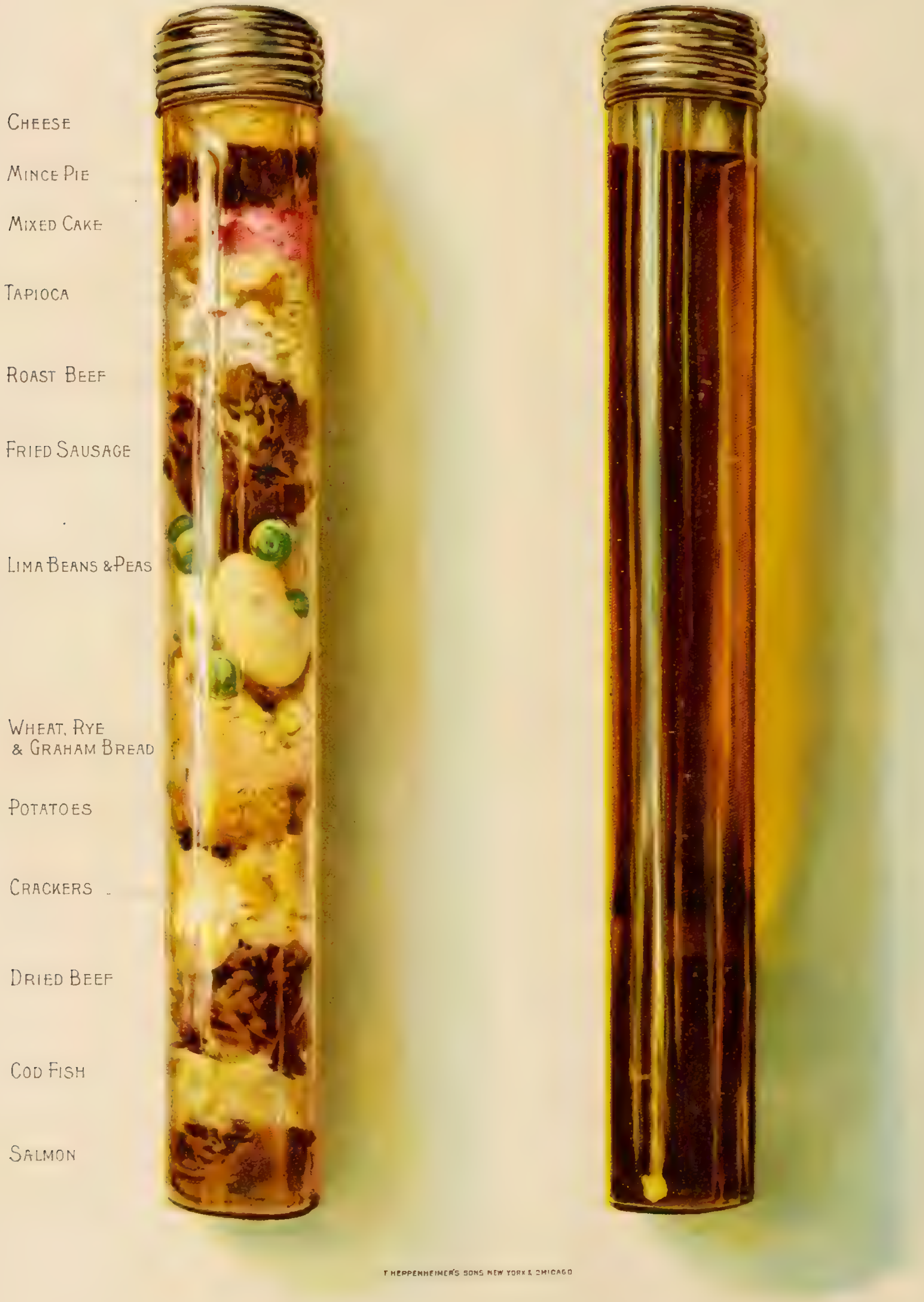
The normal method of operation for a stone in this situation—namely, the common duct—is choledocho-lithectomy with suture of the walls of the common duct after the removal of the stone. This operation in itself is radical, leaves no detritus for the formation of subsequent stones, and so far, in the hands of skilled operators, has been successful.

The operation of cholecysto-enterostomy, or the union of the gall-bladder to a neighboring coil of intestine, is one which at the present time is performed at one etherization, and Kappeler has had five cases with no deaths.

In fistula of the gall-bladder, where the secretion is in large amount, whether traumatic, ulcerative, or operative, in permanent closure of the common duct (except where due to stone), and in perforation of the common duct into the abdominal cavity, it is an operation by far the best and with the slightest mortality.

In patients who are weak at the time of the operation it is to be replaced by a provisory cholecystostomy. Where stone obstruction exists in the common duct, choledocho-lithectomy or lithothripsy must replace it.

I do not intend to enter into the minute details of the operative treatment, such as the method of suture, the antisepsis, and the application of dressings, for I do not consider them as in any way differing from what is daily practiced by all surgeons. I do think, however, that the sur-



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geon often neglects to make use of certain points which are not only valuable but often decide the success or failure of the operation. Mention will only be made of such as appear to me to be not infrequently overlooked. A very careful and even prolonged clinical observation in diseases of this character should be considered absolutely necessary to insure good results.

Too great attention can not be given to a close and repeated investigation of the patient in general, and especially of the different excretions and secretions. Of such, no observation is more important than the hæmorrhages into the skin, stomach, and intestine. This is of a special importance in those suffering from chronic jaundice and well-marked cholæmia. Where such hæmorrhages exist, any operative interference is to be avoided.

A careful examination of the abdomen in narcosis is indispensable, as in no other way can the surgeon be positive of the position of the liver and gall-bladder and know the best position for incision.

In order to procure the largest space possible in which to operate, as well as to avoid the danger of intestinal collapse after the operation, the administration of such medicinal agents as will free the intestines from all gas is an indispensable prerequisite to the operative treatment.

Of the other details in these operations the method of incision is one of the most important. As the normal position of the gall-bladder when full forms a slight projection beneath the border of the liver at the union of the tenth and eleventh costal cartilages, a vertical incision has been usually made in the parasternal line and along the external border of the rectus muscle. The reason for this has been the aforesaid position of the gall-bladder and to avoid any injury to the fibers of the rectus muscle and to the vessels within it. This is the oldest method of incision, and for some operations is quite sufficient to give space enough in which to operate.

We must admit, however, that this incision for all cases, especially where the obstruction exists in the common duct, or even in complicated cases involving the gall-bladder or cystic duct alone, has been insufficient—so much so that it has been frequently necessary to add a transverse incision through the rectus muscle to the vertical incision already made.

This has been especially the case where adhesions have bound the gall-bladder to the neighboring organs, where the gall-bladder has been displaced, or where stones have existed in the cystic and common ducts.

The vertical incision is sufficient for diseases of moderate extent involving the gall-bladder alone, or the cystic duct near it, and consequently for the operations of cholecystectomy, cholecystendysis, cholecystostomy and its modifications.

The incision recommended by De Roubaix, beginning an inch below the xiphoid cartilage and at the linea alba and extending obliquely downward and outward for a distance of from three to four inches and finally horizontally, is considered the best incision where adhesions are present, the gall-bladder is displaced, stones are tightly wedged in the cystic duct, or where the seat of the disease is in the common duct.

The exact location of this incision can be definitely stated if we follow Courvoisier's recommendation to make it just above the border of the liver as felt at the time of operation.

This gives, when the liver is lifted so as to be on a level with the superior border of the incision, an excellent view of this region and a sufficient space to handle with ease whatever adhesions exist, as well as for a careful digital examination of the common duct and for a subsequent toilet of the peritonæum in this neighborhood.

By this latter incision one has space enough to perform any of the operations upon the ducts and gall-bladder.

It is the incision *par excellence* where a probable diagnosis has to be made before operation.

In closing my article, I wish to acknowledge my indebtedness to the following authors, whose works I have made use of in the preparation of this article: Courvoisier, Tait, Bernays, Parkes, Langenbuch, Knowsley-Thornton, Kronlein, v. Winiwarter, Czerny, De Roubaix, Kocher, and Kappeler.

ON THE
DIGESTIVE FERMENT OF THE CARICA PAPAYA
IN GASTRO-INTESTINAL DISORDERS.

By FRANK WOODBURY, A. M., M. D.,
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During the past year, having devoted considerable attention to the clinical applications of papoid (papain Finckler), especially in digestive disorders, I have had the satisfaction of witnessing a number of very interesting results, to which I wish briefly to direct attention. The successful application of physiological data must be my excuse for again directing attention to a remedy which has been studied by such eminent investigators as Wurtz and Bouchut, Finckler, Rossbach, Roy and Wittmack, and one, furthermore, the physiological and therapeutical actions of which, at the present day, may be regarded as pretty fully established. If I have little of novelty to offer as regards the agent employed, I may at least point out very briefly some of its clinical uses and the conditions of its successful employment. If I accomplish this modest task the labor will not be in vain, since success in therapeutics depends upon pharmaceutical preparation and mode of administration, in many instances, as much as it does upon the selection of the proper remedy.

There were two considerations that especially led me to study the clinical applications of the juice of the papaw to disorders of digestion. The first was the relatively large number, both in private practice and clinical service, of patients, otherwise enjoying good health, but complaining of digestive disorders. The second was the following statement of Lauder Brunton's, which I encountered some years ago:

"In the West Indies a tough beefsteak is rendered tender by rubbing it with the juice of a fresh papaw.

fruit, which contains a ferment, papain, having an action very much like the trypsin of the pancreas." *

The line of argument that would naturally be followed by the mind after receiving such a statement would be this: "A tender beefsteak is more easily masticated and digested than a tough one; consequently an agent possessing the power of making this change must be of considerable value as an aid to digestion, when weakened from any cause." Before considering the therapeutics of this unique remedy, however, I may briefly summarize its physiological actions and other properties.

For more than a century it has been known that the milky juice of the papaw has the power of softening meat, and it is still in general use for this purpose by the natives in the West Indies and some districts of South America. Indeed, it is stated that at Quito, where, on account of the elevation, water boils at too low a temperature to cook the meat tender, the juice of the papaw is a culinary necessity. The South American melon-tree, papaw, or *Carica papaya*, is indigenous to the tropical portion of this continent, but is easily cultivated in other warm countries and in hot-houses. It bears a large melon-shaped fruit, turning yellow when ripe, containing a great many seeds, the pulp having a not disagreeable taste, except that, according to Rossbach, it slightly suggests the odor of turpentine. The trunk of the tree, the leaves, and the fruit, all contain a large quantity of a milky juice, which rapidly undergoes a fermentative process and separates into two equal portions, a fluid and a semi-solid. The latter, which, when dried, is soluble with difficulty, received the name of "papayotin" from Peckolt, of Rio Janeiro. By the addition of sugar or glycerin and a few drops of peppermint oil, the fermentation may be prevented and the juice retain its active properties for some time. If alcohol be added to this milky juice the digestive ferment will be precipitated, and to this the name of "papain" was given by Wurtz and Bouchut, who, in 1879, made the first thorough investigation of this agent. Analyses made by Wurtz, however, showed remarkable discrepancies in chemical composition and physical properties. Rossbach subsequently suggested that this variation might be due to the presence of peptones, which he succeeded in separating by dialysation. He found the pure papain approximating the general constitution of albuminoid bodies in its composition, as, in addition to carbon, hydrogen, and nitrogen, it contains about 2·61 per cent. of sulphur. Its solutions, however, do not coagulate on boiling, but are liable in a few days, if left undisturbed, like other albuminous solutions, to become foul with vibrios and bacteria. From a clinical and therapeutic standpoint, the following chemical reactions possess some interest: "Hydrochloric acid, added to a solution of papain, causes a heavy precipitate, which, however, is soluble in an excess of acid. The same result is seen from the addition of nitric or metaphosphoric acid, but not from ordinary phosphoric acid or acetic acid. Corrosive sublimate does not cause any precipitate, or at the most a slight cloudiness, which afterward becomes more pronounced; on the contrary, if heat is applied, a heavy flocculent precipitate takes place" (Rossbach).

Professor Finckler, of Bonn, devised a process of purification of papain which yields a superior product, and free from albuminates and peptones to a degree not hitherto attained. This papain Finckler, or "papoid," as in this country it is known commercially, is a fine cream-white powder, almost devoid of odor and taste, freely soluble in both water and glycerin, and claimed to be of uniform digestive activity. If it should be introduced into our national pharmacopœia, analogy would require a change of termination, and probably "caricinum" or "caricin" would be the more acceptable designation for the pure product than either papoid or papain, which is liable to be confounded with other preparations from the juice, which are of much less digestive power and contain a variable proportion of peptones and other impurities.

The physiological actions of papoid as a digestive agent have been thoroughly established. It acts upon albuminoids, hydrating them and converting them ultimately into peptones, as fully demonstrated by George Herschell.* It converts starch with great promptness, the ultimate product being maltose. It emulsifies fats. Moreover, Herschell declares that it has a direct tonic action upon the stomach, stimulating the secretion of gastric juice or pepsinogen. Papoid, according to the same authority, is distinctly antiseptic in its action and prevents abnormal fermentative processes from taking place in the stomach and intestines. An important point is, that it can be given in conjunction with true antiseptics, such as salol, when necessary, without its digestive action being checked; even corrosive sublimate in dilute solutions does not interfere with its digestive powers. It acts at all temperatures, but attains its maximum activity at a temperature of about 130° F. In several important points it differs from pepsin. Papoid acts best in alkaline solution, but also can work in fluids with an acid or neutral reaction; pepsin requires an acid solution. Papoid is freely soluble and is most active when in concentrated form; pepsin requires free dilution. Herschell also points out the greater digestive power possessed by papain Finckler than either pepsin or pancreatin, and states that "it can be used when pepsin is contra-indicated or powerless." Finally, it should be stated that papoid has no action upon living tissues and is positively innocuous when swallowed in any quantity that is likely to be administered.

Therapeutically, confining these remarks strictly to digestive disorders, papoid is useful when digestion has been overtaxed, or when the secretion of gastric juice is absent or deficient. Experiments of my own and others made with the kind assistance of Mr. F. B. Kilmer in Messrs. Johnson & Johnson's laboratory at Newark have satisfied my mind of the remarkable digestive activity of papoid. For instance, in one of the experiments referred to, portions of the constituents of a hearty dinner of bread, meat, potatoes, peas, mince-pie, and other substantials were placed in a large test-tube and treated with papoid and bicarbonate of sodium and a small amount of water. The result was very satisfactory indeed; the meat rapidly softened and the other ingredients gradually disintegrated, forming a pultaceous mass which finally separated into a grumous sediment and an overlying albuminous, dark-colored liquid. [The artist has endeavored to celebrate this victory of papoid in the accompanying illustration, the only criticism upon which that can be offered is that it is, if anything, rather too graphic.]

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* *On Disorders of Digestion, their Consequences and Treatment.* Lettsomian Lectures. By T. Lauder Brunton. London, 1886, p. 54.

* *Indigestion; A Manual of the Diagnosis and Modern Treatment of the Different Varieties of Dyspepsia.* By George Herschell, M. D. Lond. Page 140, London, 1892.

Since papoid acts in alkaline solutions even better than in acid media, it is evident that it is specially useful where there is *indigestion due to deficient secretion of gastric juice* or of hydrochloric acid (achlorhydria). In such cases the administration of an alkaline solution of papoid favors gastric digestion both directly and indirectly: First, by digesting albuminates and softening masses of food, and, secondly, by the action of the papoid in stimulating the secretion of the pepsin glands, while the alkali induces the secretion of a more acid gastric juice. Moreover, it retards the fermentation of the undigested masses of food in the stomach and prepares them for intestinal digestion. In fact, in such cases a compressed pill of papoid, bicarbonate of sodium, and extract of nux vomica has given me excellent results. In the contrary case, *where there is an excess of hydrochloric acid*, and where the stomach contents poured into the duodenum are so acid that they prevent the action of the trypsin, papoid prevents duodenal indigestion by taking the place of the pancreatic ferment. As Herschell points out, it is obviously of no use to give pancreatin by the mouth, as it is at once destroyed by the acid of the stomach, and it is practically impossible to administer sufficient alkali to neutralize the excess of acid, and it would, moreover, be unwise, because it would stimulate still further the secretion of the acid. Papoid is of the greatest use here, because its activity is not materially affected by contact with acid.

In *gastralgia*, which often accompanies the condition just named, papoid, with bicarbonate of sodium, gives immediate relief. On account of its well-marked sedative action, it is also useful in *irritable stomach, nausea, and vomiting.* In seasickness I have not had an opportunity as yet of using it, but I would anticipate decided relief from its administration. In *gastric catarrh* and the *catarrhal condition of the intestinal tract* popularly known as *biliousness*, papoid administered in hot water fifteen minutes before meals, or upon rising in the morning, cleanses off the mucus and places the mucous coat of the digestive organs in a good condition for secretion. *Constipation*, especially in children, is often caused by imperfect digestion. In infants, for instance, the fæcal masses consist largely of casein. Here a digestive agent is the rational remedy to administer, and, in fact, I have used papoid with good results in just such cases, even in very young infants. On account of its sedative action, it is very efficient for the relief of *colic* in infants, as well as *persistent vomiting.* Its antiseptic action and its ability to digest in the presence of antiseptic agents makes it useful in the treatment of *irritative diarrhœa* in young children, to whom it may be given in combination with salol, or salicylate of bismuth. In *apepsia* of young children, or in that form of deficiency of the gastric juice in adults due to *atrophy of the gastric follicles* as the result of chronic catarrhal processes, the glycerin solution of papoid (1 to 20) is especially effective. It is permanent and retains its activity for a long time, whereas watery solutions should be freshly made or they will not keep their digestive power. (This may possibly be explainable on the ground that, in the presence of water, papain, being an albuminoid body, partly undergoes hydration and digests itself.) Furthermore, as already stated, watery solutions of papoid, like other albuminous fluids, are apt to become attacked by bacteria and undergo decomposition after standing for several days.

The uses of papoid in treating disorders of the digestive organs may be summarized somewhat as follows: [*]

1. In actual or relative deficiency of the gastric juice, or its constituents.
  (*a*) Diminished secretion of gastric juice as a whole.
    Apepsia.
    Anæmia and deficient blood supply.
    Wasting diseases.
  (*b*) Diminished proportion of pepsin.
    Atonic dyspepsia.
    Atrophy of gastric tubules.
  (*c*) Diminution of hydrochloric acid.
    Achlorhydria.
    Carcinoma.
  (*d*) Relative deficiency of gastric juice.
    Overfeeding.
2. In gastric catarrh.
  (*a*) Where there is tenacious mucus to be removed, thus enabling the food to come in contact with the mucous membrane.
  (*b*) Where there is impaired digestion.
3. In excessive secretion of acid.
    To prevent duodenal dyspepsia.
4. In gastralgia, irritable stomach, nausea or vomiting.
5. In intestinal disorders.
  (*a*) In constipation due to indigestion.
  (*b*) In diarrhœa, as a sedative.
  (*c*) In intestinal worms. (This claim [†] the writer has not personally verified, but as the intestinal mucus which shields the worms is removed by papoid, it is easily understood that their removal would naturally result after its administration).
6. In infectious disorders of the intestinal tract.
  (*a*) Where there is abnormal fermentation; by its antiseptic action, which may be heightened by combination.
  (*b*) Where there are foreign substances present, its detergent effect may be utilized in cleaning out the *débris* from the intestinal contents by digestion.
7. In infantile indigestion; here papoid not only readily

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[*] This table agrees in the main with that of Herschell (*loc. cit.*).

[†] Descourtely and Tussac, *Flore des Antilles*, mentioned by Rossbach, *loc. cit.*

peptonizes cow's milk, but the resulting curds are also soft and flocculent, resembling those of breast milk.

The dose of papoid, ordinarily, is one or two grains, but five grains or more may be used, the only objection being that of useless expense and waste except where very prompt effects are desired, in which case even larger doses of the remedy may be administered. In case of obstruction of the œsophagus by an impacted piece of meat and gristle—such as has been recently reported—a paste of papoid and water with some soda would produce softening in a very few minutes.

TWO REMARKABLE CASES.

By P. F. HARVEY, M. D.,
MAJOR AND SURGEON, U. S. ARMY.

Case I. *Unrecognized Incomplete Abortion; Septicæmia; Impending Death from Hæmorrhage; Intercellular Injection of Defibrinated Blood; Pyæmia; Recovery.*—On the morning of August 24, 1891, I was called in consultation to see Mrs. M. M., who had been suffering from metrorrhagia during the preceding three months, and for about ten days had presented some symptoms which her medical attendant, Dr. E. B. Frick, U. S. Army, thought resembled those of typhoid fever. The night prior to my connection with the case the patient had flooded to such an extent that the physician in attendance deemed it necessary to call in assistance, and accordingly summoned another practitioner, Dr. H. S. T. Harris, U. S. Army. Careful examination failed to elucidate the cause of the hæmorrhage, and the following morning I was invited to see the patient as an additional consultant. At the time of this visit Mrs. M. was *in extremis*, her body was almost exsanguined, her face was extremely pale and anxious, her respiration was sighing, her radials pulseless, and heart sounds barely audible to the ear applied directly to the chest. Her arms and legs were cold and clammy, and the prognosis appeared gloomy in the extreme.

A digital examination disclosed a dilated cervix containing in its grasp a soft body not discoverable the night before, which I believed to be a placenta. My finger could pass beyond this into the womb, and it was deemed advisable to remove the after-birth and tampon. There was considerable resistance felt in drawing away the substance, suggesting some internal attachment. When removed and examined, it was found to be placental tissue, with one side sloughing and extremely offensive; in bulk it seemed to be about one half or two thirds of the entire placenta of a five or six months' fœtus. A tampon was at once introduced, brandy, spirits of ammonia, and digitalis were administered hypodermically, hot-water bottles were placed around the patient, and warm, nourishing liquids given her *per orem*. The subject of transfusion of blood or other suitable restorative liquid was discussed and abandoned, owing to the impossibility of finding a vein without making an exploratory dissection through a thick layer of fat, and to the imperfect condition of the only transfusion apparatus at hand, due to hardness of the rubber from age. Moreover, it was concluded that reaction might be secured by less dangerous means It was decided, however, after a long and earnest consultation by all the physicians, that, should the pulse show any further signs of failure, hypodermic injections of defibrinated blood should be tried in addition to the other measures in use. The cellular spaces beneath the clavicles were selected as the preferable region into which to throw the fluid for obvious reasons. This was a new method of using blood, but it seemed the only promising one.

At midnight the patient appeared to be dying; her heartbeats were barely perceptible and progressively failing. There appeared to be no time to be lost, and it was thought that the sole remaining chance of saving the patient lay in the use of the defibrinated blood. Accordingly, a healthy man was bled and about two ounces of defibrinated blood secured by the usual method. This was thrown, by means of a hypodermic syringe, into the parts above named. The effect was immediate, her heart rose at once, and continued subsequently to yield a radial pulse and to gradually strengthen. Nourishment was carefully continued, and the patient slowly grew stronger.

Her temperature, which for an indefinite period had been abnormally high (septicæmia), sank to the normal after the severe hæmorrhages, and so continued for two days. As the strength of her circulation increased, her temperature rose, ranging from 101° to 104° F., but it was thought to be due to the reaction. It was deemed prudent, however, to irrigate the uterine cavity with an antiseptic solution twice daily. A wash of bichloride of mercury, 1 to 3,000, was used, and the vagina was washed at noon with carbolic-acid solution, one per cent.

At 10.30 p. m. of the night of August 31st she was seized with a violent chill, and her temperature ran up to 106·5° in the axilla. Phenacetine, brandy, egg, and milk were resorted to, the former bringing the temperature down to 101° at six o'clock the following morning. Large doses of quinine and brandy were exhibited during the day. The symptoms now became those of marked pyæmia, the characteristic odor permeated the whole house, and the patient presented every other evidence of profound septic intoxication. Her temperature fluctuated under the influence of the antipyretics used, but there appeared no hope now whatever of ultimate recovery. Her tongue and teeth became dry and blackened, her mental faculties were overclouded with persistent coma, hiccough set in, and her stomach obstinately refused to retain nourishment. One of the three physicians in attendance was constantly at her bedside night and day, and no proper expedient was omitted to assist her naturally strong vital powers to live down her disease. Antiseptic intra-uterine irrigations and the free use *per orem* of quinine and brandy were continued for about one week, when there appeared to be an improvement in the patient's condition. In the mean time she had lived mostly on her own adipose tissues. From a comatose and moribund condition she gradually passed into one of greater intelligence and physical strength. Three months or more were consumed in convalescing, a severe phlegmasia dolens complicating and retarding its progress.

Aside from the remarkable character of this recovery—altogether the most remarkable I have ever seen in a busy practice of twenty-seven years—the case presents other points of interest. Mrs. M. had been pregnant and had suffered a partial abortion without her knowledge. She denied pregnancy, but she is a married woman and there existed no reason other than positive ignorance why she should have sought to conceal her true condition from her physician. She probably aborted in the third month, losing the fœtus but retaining the afterbirth, which I believe maintained for an uncertain period its maternal attachment and subsequently grew, finally becoming detached and putrescent, causing hæmorrhage and septicæmia.

Case II. *Resuscitation by Tracheotomy after Death from Pseudo-membranous Croup.*—This case occurred several years ago, and is now reported from notes taken at the time:

C. P., eight years of age, had been suffering from diphtheritic croup some days, and was under the treatment of Dr. R. M. O'Reilly, U. S. Army. He had progressed favorably, the treatment apparently meeting all the indications. At four o'clock on the evening of the fifth day of the treatment an urgent message came by telephone that the child was dying. Dr. O'Reilly requested me to accompany him and perform tracheotomy if time remained for that operation to be done. The house was some distance away, but we proceeded as fast as horses could take us and arrived at 4.30 o'clock, where we were joined by a resident physician of Provident Hospital, whose name I have forgotten. A member of the family met us in the hall and informed us that the child was dead. We at once made a close examination of the body and found that there were reasons for believing that a spark of life might yet be remaining, and an immediate operation was advised as holding out a faint hope. The mother of the lad at first refused to give her consent to the use of the knife, as she declared that it would be of no use and would only add to her agony; but after a little urging she saw the impropriety of opposition and consented. Without delay the patient was placed upon a table, and at that time presented every appearance of a corpse. The circulation and respiration had both ceased; the body was still warm, but ashy-pale in color; somatic but not molecular death had occurred.

It must be confessed that no physician present was very sanguine of success. The operation was proceeded with as hurriedly as consistent with its proper performance by gas-light. Anæsthesia was, of course, unnecessary. A rapid dissection was made down to the trachea between the sterno-hyoid and sterno-thyreoid muscles; two branches of the tracheal plexus oozed somewhat, but the pressure of the forceps sufficed to stanch them. Three rings of the trachea were incised and the tube passed in. Although the breathing had entirely ceased, the moment the tube was introduced a shallow expiration occurred, then a deep inspiration, followed by a short period of quiescence; after this, regular respiration was established. The heart resumed its movements, and from the hue of death it was pleasant to note the color of the countenance change back to that of life. In thirty minutes the child was perfectly rational, and asked by signs for water and milk, both of which he drank freely.

I remained with him during the night. He slept well and I left him the following morning progressing favorably. A consultation was held in the evening between the three physicians in attendance. Some reactionary fever had set in, the pulse was thought too rapid and bounding, and it was decided that minute doses of the tincture of aconite should be given every fifteen minutes until a proper reduction was effected. Dr. —— remained with him. At nine o'clock he died from what the physician who was present regarded as heart failure—a result entirely unexpected two hours before.

It might appear that the arterial sedative contributed to this result, but that scarcely seems possible, as the doses were minute—one tenth of a minim. But it must be regretted that it was exhibited at all, as the suspicion that it did depress the heart can not be avoided. Perhaps tonics, stimulants, and concentrated nourishment might have yielded a different result.

The fatal termination of this case is greatly to be deplored, but it is thought of sufficient interest to record as teaching at least the possible value of remedial measures at the last moment in the most desperate diseases. The statement is sometimes heard that a certain person was given up by the doctors. Undoubtedly experience and observation will give almost infallible warning of the inexorable approach of death, but the fact that a lingering spark may be kindled into a flame by a last resort, or by conscientious and unwavering effort, is sufficient to render the abandonment of any living patient unjustifiable.

Fort Keogh, Montana, *May 7, 1892.*

ANÆMIA.

By B. K. RACHFORD, M. D.,
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The study of two cases of anæmia that recently came under my observation were of so much interest and profit to me that I deem them worth publication. These cases impressed on my mind the necessity of using a hæmoglobinometer in the diagnosis of this condition, and also suggested the importance of recognizing anæmia as a possible pretubercular condition.

Case I.—November 4, 1891, a woman, twenty years of age, came to my office for treatment.

Family History.—Her mother, her only brother, and only sister died of "consumption" within the last five years. Her brother and sister were grown when they died, and she was at home during the sickness of all of them. Her father is now confined to his room with pulmonary tuberculosis, and she is nursing him.

Personal History.—She has been strong and well all her life till within the last few months. During this time she has had pain in the left side and more or less dyspnœa. She thought nothing of these symptoms, and continued to look after her father and do her house-work as usual; but at present these symptoms have increased to such an extent that she can scarcely "keep up." She comes to-day complaining of great weakness, a tired feeling, considerable dyspnœa, pain in the side, no appetite, sick stomach, and great nervousness. There is no fever, no cough, and no headache.

During the last few months the menstrual flow has been very slight and almost colorless, and last month there was "no show" at all.

Physical Examination.—Heart and lungs normal. The most pronounced and striking symptom is the extreme anæmia. The face is pallid, and the lips and conjunctiva have very little color. Blood examination shows only twenty-five per cent. of hæmoglobin and 1,680,000 red corpuscles in a cubic millimetre.

Treatment.—Three grains of reduced iron and one twentieth of a grain of arsenious acid three times a day.

November 18th.—Hæmoglobin thirty per cent. Says she is somewhat better, but the improvement has not been great. Changed treatment to saccharated carbonate of iron, ten grains three times a day.

29th.—Hæmoglobin forty per cent. Is much better; can now do her house-work without much fatigue, but she is still pale and has some dyspnœa on exercise. On the 23d she had a menstrual flow lasting a few hours.

December 1st.—Hæmoglobin fifty-two per cent. Improving every way; eats and sleeps well. The nervousness and shortness of breath have almost disappeared. She is getting tired of the medicine. Changed treatment to Warner's compound chalybeate pills, two after each meal.

10th.—Hæmoglobin sixty-five per cent. All symptoms have disappeared, and the patient says she is well and thinks it is not necessary for her to continue treatment. From this time on she was induced to continue treatment through the evidence furnished by the hæmoglobinometer. With this instrument she could see for herself that her blood had much less color than it ought to have. And as she had noted with me from time to time the gradual increase in the color of her blood, she was easily persuaded to continue the treatment.

17th.—Hæmoglobin seventy per cent.

29th.—Hæmoglobin seventy-eight per cent. Treatment changed to reduced iron, three grains, and arsenious acid, one twentieth of a grain, three times a day.

January 18th.—Hæmoglobin ninety per cent.

February 1st.—Hæmoglobin ninety per cent. After nearly three months of continuous treatment all medicine was stopped.

17th.—Hæmoglobin ninety per cent. Corpuscles 4,000,000 per cubic millimetre. She can not remember when she was as well as she is at present. She "put in" a load of coal during the past week without getting tired.

March 10th.—The girl remains well, and is almost constantly at the bedside of her father, who is slowly dying of consumption.

Here let me call attention to the great value of the hæmoglobinometer in the management of this case. If it had not been for this instrument I should have dismissed this girl as "cured" on December 10th. But she, as well as myself, could see by the aid of the hæmoglobinometer that she was not as well as she felt, that her blood contained only sixty-five per cent. of hæmoglobin, and that this percentage had gradually increased under the treatment. She was therefore easily persuaded to continue treatment till February 1st, when her blood was almost normal. When we consider that this girl had a tubercular family history as bad as it could possibly be, and that she was unavoidably exposed to the contagion of this disease in nursing her father, the importance of bringing her blood state up to the normal and keeping it there can not be overestimated. How could we expect this girl to resist tuberculosis with such a family history and under such exposure, with blood impoverished and reduced in corpuscular elements? It seems to me that whatever chance she may have of escaping this disease lies in bringing her blood state up to the normal and keeping it there, and this could not have been satisfactorily done without the use of the hæmoglobinometer.

Although there may be many elements of error in the use of the instruments used for determining the amount of hæmoglobin in blood, yet the information obtained in this way is accurate enough for practical purposes, and is certainly very valuable in the management of a certain class of cases of which the one reported is a type. And since the use of these instruments requires as little time and skill as almost any other instrument of precision used in medicine, it seems strange that they are not in more general use among the profession.

In the case reported I think it probable that if this girl's blood state is carefully watched till she can be placed under more favorable hygienic surroundings and separated from further contact with this disease, she may be able to resist it. This case was the first to impress on my mind the importance of considering the relationship of anæmia to tuberculosis, and led me to make an extensive investigation into the character and causes of the anæmia that often precedes apparent tuberculosis. But this I reserve for a subsequent paper. In illustration of the points spoken of in this paper I will report one other selected case:

Case II.—S. P., a servant girl, twenty years of age. Her mother and several of her aunts on her mother's side died of consumption. She was at home when her mother died, and was therefore exposed to the contagion. For several years she has been "living out," doing general house-work; but during the past year she has not been as strong as usual, complaining at times of pain in the side and shortness of breath. In July, 1891, I saw and prescribed for this girl, and was much impressed with her extreme anæmia. At this time she took iron for about three weeks, and I then lost sight of her during my summer vacation.

February 3, 1892.—She again reported at my office, giving the following history: After taking the iron last July she was much better and continued to "live out" ever since. At times she has had pain in the side and been short of breath, but at no time did she think herself sick enough to take medicine. Her monthly periods have been regular, but during the last six or eight months they have been very slight and very pale in color. Two weeks ago she had "influenza," and since that time she has been worse.

Present Condition.—She has pain in the breast, palpitation of the heart, weakness, dyspnœa, nervousness, no appetite, and constipation.

Physical Examination.—No evidence of disease of the lungs. The extreme anæmia is so marked that the lips and conjunctiva have very little color. There is a very distinct anæmic heart bruit; hæmoglobin thirty per cent.; corpuscles 1,500,000 to the cubic millimetre.

Treatment.—Reduced iron in capsules, five grains night and morning.

February 18th.—Very much improved in every way. Hæmoglobin fifty per cent.

24th.—Much better. Hæmoglobin sixty-five per cent.

March 3d.—Hæmoglobin eighty per cent. She says she is well, appetite is good, no shortness of breath, heart bruit has disappeared. She feels better than she has in a year. She was induced to continue treatment.

14th.—Hæmoglobin ninety per cent. Discharged well.

These two cases have strongly impressed me with the great danger of exposing anæmic girls with or without tubercular histories, but especially with tubercular histories, to the tubercular contagion. As physicians, it is our duty to forbid all young people remaining any length of time in the sick-room of the tubercular patient. And over anæmic boys and girls with tubercular histories we should be especially watchful, absolutely excluding them, if possible, from the sick-room. But should this not be practicable, as in many instances it will not be, then it is the duty of the physician to examine the blood of the young people thus exposed to the disease, and if the amount of hæmoglobin is found to be below eighty-five or ninety per cent., they should immediately be given proper treatment and kept under treatment till the blood state approaches the normal.

A careful following of this rule of treatment will, I think, save a great many people from the "great white plague."

SALOPHEN IN ACUTE RHEUMATISM.

By WILLIAM H. FLINT, M. D.,
ATTENDING PHYSICIAN AT THE PRESBYTERIAN HOSPITAL.

The writer's attention was first called to the therapeutic agent the name of which stands at the head of this paper by an agent of Messrs. W. H. Schieffelin & Co., who kindly handed him a sample of the new remedy, in May, of this year, together with the only literature pertaining to salophen which has yet fallen under his observation. This literature is the copy of a paper read before the Berlin Medical Society, December 1, 1891, by Dr. Paul Guttman.

At a somewhat later date, in June of this year, Messrs. Schieffelin & Co. generously furnished the writer an abundant supply of salophen for trial during his summer service at the Presbyterian Hospital. Before giving the results of his own experience with this drug, the writer proposes to briefly present the salient points made by Dr. Guttman in the paper to which allusion has already been made, for the benefit of those readers who may not have seen Dr. Guttman's article.

Salophen, or acetyl-para-amydosalol, occurs in the form of white, crystalline scales, almost insoluble in water, more soluble in hot water, but fairly soluble in alcohol and ether, particularly with the aid of heat, and is without taste or odor. According to Dr. Siebel, of the Elberfeld Chemical Works, formerly Friedrich Bayer & Co.'s, the formula of salophen is

$$\underset{\text{COO,}}{C_6H_4OH,\ C_6H_4N}\left\{\begin{matrix}\text{H}\\ \overline{\text{COCH}_3}\end{matrix}\right.$$

and it contains fifty-one per cent. of salicylic acid. Dissolved in caustic soda and heated to the boiling point, salophen splits up into salicylate of soda and acetyl-para-amydophenol, the liquid then assuming a violet or blue color. Both these component parts may be demonstrated by appropriate tests. The same separation of salophen into its constituent elements takes place in the animal body, since salicylic acid and acetyl-para-amydophenol can both be recovered from the urine of those who have taken the drug. Experiments on animals, in the Elberfeld Laboratory, by Dr. Guttman, having proved that salophen, in moderate doses, about 0·4 gramme (6 grains) for every kilogramme of the animal's weight, is well borne, began the administration of salophen to men, and found that 6 and 8 grammes (90 to 120 grains), *per diem*, were well tolerated. From the fact that salophen is resolved, in the system, into salicylate of soda and acetyl-para-amydophenol, Dr. Guttman drew the inference that it might be of use in the treatment of rheumatic ailments, and his article embodies the histories of four cases of acute articular rheumatism treated with this remedy. These cases, and others observed by Dr. Guttman, seemed to prove that salophen in doses of from 4 to 6 grammes (60 to 90 grains) a day exerted an undoubtedly favorable effect upon acute articular rheumatism, especially in recent cases. The four cases described by Dr. Guttman were discharged cured after eighteen, nine, ten, and ten days, respectively, while relief from fever, pain, and swelling of the joints was obtained in about two days in each case. Dr. Guttman's results from the salophen treatment were not always so favorable as in the four cases cited. In some instances the disease was less readily amenable to the remedy, the symptoms being protracted over several weeks, and in a few cases salophen had no controlling effect over the disease. Dr. Guttman also instituted experiments to ascertain whether salophen possesses antipyretic properties, and found that while it reduces fever, it does so only to a slight extent and for a short time. The action of salophen in chronic articular rheumatism was found to be much less favorable than in the acute forms of the disease. Dr. Guttman's paper closes with the following conclusions, based upon his observations concerning the action of salophen: "Salophen is a useful remedy in acute articular rheumatism, and it should be tried in chronic articular rheumatism and in other rheumatic affections. To obtain the best results, the dose must be at least 4 grammes (60 grains) *per diem*, and may be even advantageously increased to 6 grammes (90 grains). These doses must be continued daily until the subsidence of the symptoms, and may then be somewhat reduced. The remedy, when administered daily, in doses of from 4 to 6 grammes (60 to 90 grains), or even more, is entirely free from after-effects."

During his summer service at the Presbyterian Hospital, just now completed, the writer has caused salophen to be administered to all cases of rheumatism entering the hospital, and has been so well pleased with its action that he desires to make known to his medical *confrères* the apparent advantages of the salophen treatment, hoping that their results from the use of the remedy may be as happy as his own.

Some of the earlier cases treated by the writer with salophen can not be utilized for the purpose of drawing inferences concerning the effect of the remedy, because, owing to the short supply on hand, the use of salophen was suspended after a few days, and replaced by that of sodium salicylate or oil of gaultheria. After the elimination of these doubtful cases, there remain six cases of acute rheumatism treated with salophen in fifteen-grain doses, given dry upon the tongue and swallowed with cool water, every three hours, and with sodium bicarbonate, in ten-grain doses, administered in the same way, thrice daily, and a brief history of these cases is appended, in order that the reader may possess documentary evidence of the efficacy of the medicament.

The writer wishes to express his sincere thanks to Dr. Whitmore Steele and Dr. Renwick R. Ross, house physicians at the Presbyterian Hospital, for their zealous and efficient co-operation in the treatment of the patients, and to Dr. B. Van D. Hedges, senior assistant at the hospital, for his kindness in preparing the *résumé* of the clinical histories embodied in this paper.

Case I.—E. B., aged thirty-six, married, housekeeper, admitted June 2, 1892; discharged cured June 12, 1892. Patient has had one previous attack of rheumatism, and has a blowing systolic murmur at the base of the heart. All the major joints acutely inflamed. Urine contains a trace of glucose; it is otherwise normal. On admission, temperature, 102°; pulse, 100; respiration, 24. Treatment, that uniformly applied—viz., salophen, fifteen grains, every three hours, and sodium bicarbonate, ten grains, thrice daily.

June 3d.—Temperature has fallen to 99·5°, and the pain is much less.

4th.—Temperature normal; pain and redness have disappeared.

5th.—Temperature rose to 100°, but quickly fell on the same day.

12th.—Patient discharged cured. Urine normal. No complications. No relapse. Digestion unaffected.

Case II.—Eliza H., aged forty-five, widow, admitted June 7th; discharged cured June 21, 1892. Has had one previous attack of rheumatism. The right hip joint, knee, and ankle have been acutely inflamed for one week, causing great suffering. No cardiac murmurs. Urine, 1·020, acid, and contains albumin and granular casts. On admission, temperature, 102·8°; pulse, 76; respiration, 24. Treatment as already described.

June 8th.—Temperature has fallen to normal and remained so till June 11th, when it became subnormal (98°), and so remained until the 14th, when it became normal, and remained so until the patient was discharged.

9th.—Swelling and pain diminished.

10th.—Swelling and pain gone.

21st.—Patient discharged cured. No relapses. No cardiac or other complications. Urine normal at the time of patient's discharge, the casts and albuminuria having disappeared. No digestive difficulties.

Case III.—Catherine F., aged twenty, single, domestic, admitted June 10th; discharged cured June 21, 1892. This is the patient's first attack of rheumatism. The left wrist, knee, and ankle have been acutely inflamed for four days. No heart murmurs. Urine normal. Temperature on admission, 101·4°; pulse, 100; respiration, 32. Treatment as in the other cases.

June 11th.—Temperature normal and all symptoms improved.

12th.—Temperature rose at noon to 100°, but fell to normal in the afternoon. Symptoms quite relieved.

18th.—Salophen stopped.

21st.—Patient discharged cured. No complications. Urine negative throughout. No relapse. No gastric disturbance.

Case IV.—Patrick F., aged twenty-five, single, coachman, admitted June 22d; discharged cured June 28, 1892. Has had one slight previous attack. Both wrists and the left foot are the seats of acute rheumatic inflammation, with great pain, redness, swelling, and tenderness. On admission, temperature, 100·5°; pulse, 60; respiration, 20. Treatment as in all the cases.

June 24th.—Temperature normal. Pains and swelling much less marked.

27th.—Patient walks about. No pain. Salophen stopped.

28th.—Discharged cured. No cardiac or other complications. Urine normal. No gastric disturbance. No relapse.

Case V.—Bridget P., aged thirty-eight, widow, admitted June 23d; discharged cured July 8, 1892. No previous attack of rheumatism. Had syphilis fourteen years ago. There is a slight systolic mitral murmur. Both ankles and the right wrist are acutely inflamed, presenting the usual phenomena. On admission, temperature, 102°; pulse, 107; respiration, 26. Urine normal. Treatment as in the other cases.

June 25th.—Temperature, 99 5°. Pains and swelling notably diminished.

26th.—Temperature normal from this date until discharged. Symptoms quite relieved.

30th.—Salophen stopped. Patient sits up.

July 8th.—Patient discharged cured. No gastric irritability at any time. Urine normal. No complications, sequels, or relapses.

Case VI.—Dominica P., aged twenty-six, married, Italian, admitted on June 29, 1892; still in hospital (July 14th). Has had one previous rheumatic attack. Has a blowing, systolic, mitral murmur. All of the major joints are acutely inflamed. On admission, temperature, 102·5°; pulse, 110; respiration, 30; urine, negative. Treatment, as in all the cases.

June 30th.—Temperature, 99·5°. Less swelling and pain.

July 1st.—Temperature normal, and swelling and pain reduced.

8th.—Swelling gone; pain persists, although greatly ameliorated.

12th.—Patient sits up; murmur at apex very faint; urine normal.

14th.—Pain quite gone; urine normal. Stomach has not been disturbed.

From the above-given histories it will be seen that in all the cases, except the last, the pains were quite relieved, the redness dispelled, and the temperature reduced to the normal point on the second or third day of treatment. In the one exceptional case the patient, being a poor woman in need of an asylum, may have exaggerated the intensity of her pain for the purpose of prolonging her sojourn in the hospital. This interpretation of her motives does not seem uncharitable in view of the fact that no objective symptoms of rheumatism persisted after the seventh day of treatment. It is probable that a speedier result may be safely attained by the use of larger doses, or of the same doses exhibited at shorter intervals. In none of the cases was the heart's action at all weakened, nor was the digestion impaired by the remedy. The urine was unaffected by the treatment. In Case II the urine contained a moderate amount of albumin and some granular casts when the patient entered the hospital, but these had disappeared when she was discharged. No relapses occurred and no complicating endocarditis, pericarditis, or pleuritis appeared. From these facts the writer concludes that we possess in salophen a remedy equally potent as the other salicylates to control the symptoms of acute rheumatic arthritis, but devoid of their tendency to weaken the heart's action, to disturb the stomach, and to produce albuminuria and smoky urine. Whether these claims for salophen to superiority over the other derivatives of salicylic acid be well founded, remains to be definitely decided by accumulated statistical evidence. In observing another series of cases, later in the season, the writer is prepared to meet with less favorable results, supposing that the uniform success thus far attending the salophen treatment in his hands may, perhaps, be partly accounted for by the favorable influence of the high summer temperatures on rheumatic complaints, and possibly by the prevalence of a milder type of the disease than that which is generally encountered.

The writer has also tried salophen in a number of cases of chronic rheumatic arthritis with very poor average results, although there have been one or two notable exceptions to this general rule. It is the writer's purpose to conduct a series of experiments as soon as suitable opportunities present themselves, with a view to ascertaining whether salophen may be made available for the purpose of securing intestinal antisepsis.

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SOME REMARKS ON PNEUMONIA AND THE CAUSE OF HEART FAILURE,

WITH REPORT OF A CASE.

By L. HARRISON METTLER, A. M., M. D.,
CHICAGO.

At present there are two views in regard to the cause of the much-dreaded heart failure of pneumonia. In a loose way they may be characterized as the *mechanical* and *chemical* theories. The mechanical theory is the older of the two, and attributes the cardiac weakness occurring about the crisis of the disease to the changes produced in the heart muscle by the prolonged high temperature and to the difficulty which the heart experiences in forcing the blood through the obstructed lungs. The chemical theory assigns the heart failure to a nervous source. It insists that the nervous apparatus of the circulatory system is poisoned by certain toxic matters, ptomaines and other substances, retained in the blood. It fails to explain just what the nature of the poison is, how it is generated, and in what particular manner it affects the vaso-motor nervous apparatus. Many writers approve of both the mechanical and chemical theories, and accord an equal importance to both as the causative agents in pneumonic heart failure. In the absence of more positive knowledge, this may be a discreet position to assume, but in the majority of cases it seems to me that the chemical theory offers the more satisfactory explanation. My attention was forcibly turned to this subject by the following case, which is not reported, however, as an unusual one by any means:

H. J. B., a young man, twenty-two years of age, with a fairly good family history, was one day overcome during business hours with a sudden attack of vertigo and general prostration. He did not lose consciousness, but at once went home, took to his bed, and attempted to treat himself with some simple home remedies. When I first saw him, September 15, 1891, I learned the following facts: He had been considerably annoyed with nasal catarrh, and for the last few weeks had been indulging in frequent cold baths. He described a kind of "queer feeling" over his whole body, and complained of a severe aching in the neighborhood of his joints. Near the base of the left lung he felt a short, sharp pain whenever he took a long breath. His bowels had been averaging about two movements in the twenty-four hours. His tongue was thickly coated, red along the edges, and deeply cracked down the middle. He was made uncomfortable by a constant bad taste. Tea and coffee he indulged in freely, but no alcoholics; smoked on an average two cigars a day; and as a general thing enjoyed a good appetite. He was afraid that his heart was diseased; and between the difficult, shallow breathing and the dread of impending dissolution, it was apparent that he was in great distress. His face was hot and flushed. The pulse was 96, the temperature 103°. He complained especially of an intense throbbing headache in the frontal region. There was no epistaxis or other indications of typhoid poisoning. Examination of the chest revealed a slight dullness near the base of both lungs, more marked, however, on the left side. There were no râles or perceptible fremitus. In fact, the physical signs at this time were so insignificant as to be almost nil. I gave at once a tablet containing a quarter of a grain of sulphate of morphine, one one hundred and twentieth of a grain of sulphate of atropine, and two drops of the tincture of aconite root. He was then ordered to take at once eight grains of the sulphate of quinine, continuing afterward with two grains every two hours. A mustard poultice was to be applied to the chest, an abundant milk diet allowed, and a strong mustard foot-bath taken at bed-time.

September 16th.—The patient slept during the night, but was extremely restless in his sleep. The mustard was removed from the chest before the skin had become reddened, otherwise the directions were carried out explicitly. The morning pulse and temperature were 96 and 102°. The tongue was redder and more deeply serrated. Absolute rest in bed was enjoined, and the mustard reapplied to the chest. He was ordered to take two drops of tincture of aconite root with three drops of tincture of opium in water every hour, two grains of sulphate of quinine every two hours, milk punch, lemonade, and cracked ice *ad libitum.* In my afternoon visit I found the patient feeling somewhat easier, but still restless and complaining of the pain near the base of the left lung. The pulse registered 100, the temperature 102°. I then dry-cupped him very freely, both anteriorly and posteriorly, over the lungs, which he declared gave him almost instant relief. Eight grains of the sulphate of quinine were prescribed at once, and ten grains more ordered to be taken an hour later. The mustard was soon again applied to the chest, and after its removal the upper part of the patient's body was wrapped in a thick wadding of raw cotton covered with oiled silk. At bed-time he was ordered to begin taking the aconite and opium drops every three hours for the rest of the night, and occasionally a teaspoonful of whisky in sweetened water.

17th.—The night had been close and the patient suffered a good deal from restlessness. He had been able to take very little nourishment and almost no whisky, because the stomach refused to retain either. The bowels moved about six times, with loose but not particularly offensive stools. The intolerable pain about the lungs had completely disappeared, but there still remained considerable headache. The pulse was 86, the temperature 102°. I ordered ten grains of sulphate of quinine at once, to be followed by two grains every two hours in conjunction with the aconite and opium drops. The chest was kept enveloped in cotton. A teaspoonful of brandy was administered every three hours, and such nourishment as milk, beef tea, broths, and plain jellies given every two hours. In the afternoon the pulse numbered 84 and the temperature registered 100·8°. The patient said the brandy "braced him up," and in every way he seemed much better. The two-grain quinine pills, with the aconite and opium drops, were continued every four hours, while some nourishment, with a teaspoonful of the brandy, was given every two hours.

18th.—Somewhat restless during the night, but the patient declared he felt very comfortable this morning, except for a kind of oppressive heaviness near the lower part of both lungs. Indeed, he felt so easy that he insisted upon having the barber come to shave him. At 6 A. M. the temperature had been at 100°; about the middle of the forenoon I found it to be 101° and the pulse at 76, full and strong. A slight headache only was complained of. The lungs seemed to be clearing up, and the heart showed no signs of weakness. I stopped the brandy as well as the aconite and opium drops. Nourishment was urged every two hours, and I ordered the application of a large flaxseed poultice on the lower part of the lungs, a Seidlitz powder, two grains of quinine every two hours, and a dessertspoonful of the following combination every three hours:

℞	Ammon. carb.	gr. lxxx;
	Pulv. acac. et sacchar. āā	q. s.;
	Sp. lavandul. comp.	ʒ ij;
	Aquæ ad	℥ iv. M.

19th.—The patient had four quite loose stools since the day before. There was no pain about the chest and scarcely any headache, but he complained somewhat of the fullness of the lungs and the difficulty he had in breathing. The dullness on percussion was still quite marked about the base of the left lung; somewhat less so over the same area of the right lung. I again cupped the chest freely, and ordered the flaxseed poultices to be changed every fifteen minutes. The quinine pills and ammonium-carbonate mixture were continued, and the following suppository used at 10 A. M., 4 and 8 P. M., and 6 A. M. the next morning:

℞ Pulv. opii.......................... gr. ss.;
Quinin. sulph.......................... gr. x;
Ol. theobrom.......................... q. s. M.

20th.—The patient was much easier than the day before. The pulse and temperature registered 78 and 100·5°. The pulmonic dullness was still marked, while expectoration streaked with slight rusty sputum was beginning to be freer. The dullness at the base of the right lung seemed to be increasing, while that of the left side was diminishing. I continued the use of the poultices and suppository, and ordered the following mixtures to take the place of the quinine pills and ammonium carbonate:

℞ Potas. iodid.......................... ʒ ij;
Ammon. chlorid.......................... ʒ jss.;
Mist. glycyrrhiz. comp.......................... ℥ vj.
M. Sig.: Tablespoonful four times a day.

℞ Pulv. digitalis.......................... gr. ss.;
Quinin. sulph.......................... gr. j;
Ext. opii.......................... gr. ss.;
Ext. ipecac.......................... gr. ¼.
M. et ft. in pil. no. j.
Sig.: One three times a day.

A small quantity of stimulus was allowed when there was marked weakness.

21st.—The patient expectorates freely, there is no more blood in the sputum, the pulse is full and regular, and the temperature marks 99·5°. Breathing is easier, and, in his own words, he "feels fifty per cent. better than ever." Same treatment continued.

22d.—Both pulse and temperature were normal this morning. Expectoration was free and appetite rapidly returning. The only change made in the treatment was the omission of the suppositories. So well, apparently, was the patient that, although I recommended quiet and rest in bed for a few days longer, I said I would not call as frequently, but left word that they should send for me immediately if any unusual symptoms made their appearance. I was in doubtful anticipation of the crisis.

About 5.30 P. M. I was hurriedly summoned and found that the patient had experienced, about an hour previous, a violent chill and a sudden feeling of impending death. His features showed alarm, although he was somewhat stupid and indifferent. He was covered with a cold, clammy sweat. The respiration was slow, regular, and labored. The pulse-beat was 58 and full, while the temperature continued to be normal. The lips were pale, the extremities cold, and the eyes dark and sunken. I recognized the condition as critical heart failure. The lungs upon examination were found to be comparatively clear. The heart was hypertrophied, probably as the result of the three or four previous attacks of pneumonia which the mother now told me he had passed through, but in none of which he had experienced the sudden prostration of this attack. In consultation, Dr. H. H. Deming confirmed both my opinion and treatment of the case. I at once stopped all medicine save the ammonium-carbonate mixture, and increased the amount of alcoholic stimulants. At 9 P. M. there was another violent chill, longer than the first, more prostrating, and followed by the same cold sweat, which quite wet the bed-clothing. The accompanying stupor was also the same as that following the previous chill. The anxiety and nervous depression were extreme. The pulse was weak, thready, and beat 50 to the minute. Hot bottles were placed in the bed and half an ounce of whisky in water given every hour. The ammonium-carbonate mixture which had been ordered on September 18th was resumed, and administered every three hours, together with the following pill every six hours:

℞ Pulv. digitalis.......................... gr. ss.;
Quinin. sulph.......................... gr. j;
Ext. gentian.......................... q. s. M.

Remaining with the patient myself the greater part of the night, I devoted all my attention to stimulating and sustaining the heart's action.

23d.—Called at 7 A. M. and found much less nervous depression, though an extreme degree of physical weakness. There was no cough. The respiration was slow and labored, the pulse 50, and the temperature 97·8°. The medicinal treatment was continued with free stimulation. Nourishment in small amounts was allowed every hour, consisting of milk with lime water, beef tea, mutton broth, milk toast, jellies, etc.

24th.—At 8 A. M. the condition of the patient exhibited a marked improvement. He was brighter and stronger. The pulse varied between 55 and 60. The surface of the body was warmer and there were no more chills, though he continued to perspire abundantly. In place of the digitalis pill which he had been taking, I ordered the night before the following prescription, to which I attribute the decided change for the better this morning:

℞ Strychnin. sulph.......................... gr. $\frac{1}{80}$;
Tinct. digitalis.......................... gtt. v;
Tinct. gentian comp.......................... ad ʒ j.
M. Sig.: To be taken every six hours.

The nourishment consisted of milk, beef tea, broths, toast, calves'-foot jelly, and Parke, Davis, & Co.'s hæmoglobin compound in teaspoonful-and-a-half doses three times a day.

25th.—The condition about the same. Every two hours some nourishment with an ounce of whisky was given. The ammonium-carbonate mixture was continued every two hours and the strychnine administered every four hours.

26th.—The patient passed a comfortable night and slept well. He took about a quart of milk, a full cup of beef tea, and the hæmoglobin compound. About 3.30 P. M. to-day there was another chill, not so severe as the previous ones, but followed by the same profuse perspiration. The temperature registered 97° and the pulse 52. There was no difficulty of breathing, no cough, but excessive prostration. I ordered the whisky in half-ounce doses every hour, the ammonia mixture every two hours, the strychnine every four hours, and an addition to the diet of some cup custard with a soft-boiled egg the following morning.

27th.—The patient slept soundly, but awoke feeling chilly and bathed in a profuse perspiration. His general condition remained about the same. The temperature was 98°, the pulse 52. The appetite was reviving and he was allowed to-day a small piece of mutton chop and some milk toast. The same medicinal treatment was continued.

From this time on there was nothing of special moment either in the character of the case or its treatment. Occasionally there would be a slight chill followed by a profuse sweat. The pulse continued to remain at 52, and the temperature fluctuated between 97° and 98°. The diet was closely watched and cautiously increased. The stimulants and medicines pushed, changed, or withdrawn as the conditions seemed to require.

October 2d.—The pulse was still at 52 and the temperature 97°. Patient ate some ice-cream upon his own responsibility and had a slight attack of colic. He now took three regular meals a day, an ounce of whisky every two hours, the strychnine every four hours, and a teaspoonful of the following combination after each meal:

℞ Pepsin in lamel. (P. D. & Co.) .... ʒj;
Acid. hydroch. dil .... ℥ss.;
Syrup. limon.......... .. .. ʒij:
M. Aquæ..... ....ad ℥iij.

3d.—The pulse steadily rose to 68 to-day. Stimulants were gradually withdrawn. General tonics with cod-liver oil and maltine were prescribed. A day or two later the patient began getting out of bed, and on October 10th he called at my office perfectly well but very weak.

This case, which, as I have said, is not presented on account of any unusual features, affords several lessons, and therefore I report it as a text for the following remarks: I have long been convinced that croupous pneumonia is a systemic disease with a local manifestation in the lungs. It attacks the individual suddenly and its first effects are felt throughout the whole constitution. Its nervous manifestations especially ally it to the other specific constitutional affections. It is certainly not a simple inflammation, as proved by very many of its characteristics, and especially by the results obtained when a line of treatment is adopted in accordance with the idea of its being an inflammation. Were it an inflammatory disease there would have been formulated long ago a method of treatment more universally adopted than any now employed. The late discussions and comparisons among the physicians of Paris in regard to the treatment of pneumonia revealed a most lamentable uncertainty of knowledge. Each reporter vaunted his own method, and scarcely two were found to exhibit any sort of agreement. As has been pointed out by various experimenters, the inhalation of hot and cold vapors and noxious gases, the injection of caustic ammonia and mercury, as well as traumatic injuries, all produce catarrhal but never croupous pneumonia. The bacterial origin of the latter has the support of the strongest arguments, but the nature and influence of the micro-organisms are yet far from being established, despite the popularity of the pneumococcus of Friedländer and Talamon. Though pneumonic fever is to so large an extent a *terra incognita,* there can scarcely be any doubt entertained at the present time in regard to its specific origin. Its remarkable similarity to many of the other specific and self-limited fevers lends powerful support to this view.

I do not believe that true croupous pneumonia can be aborted by any known therapeutic agent, though the severity of many of its symptoms may be greatly abated by judicious treatment. Very early in the disease I employ the opiates and even such heart depressants as aconite and veratrum to allay the pain and to modify the circulation, but I always do so with the greatest caution and only in sthenic cases. The pathological state of the blood, the frequent implication of the pleura and pericardium, the congestion of the bronchial glands, liver, spleen, and other organs, the occasional gastro-intestinal catarrh and cerebral congestion, as well as the peculiar location of the pneumonic process at the base of the lungs, all seem to me to indicate a poisoned condition of the general circulation. There is a strong probability that a ptomaine or other toxic substance is floating in the blood, and, through its baneful effects upon the nervous system, is the real cause of the disease. As Loomis says, "in local phlegmasiæ there is a direct ratio between the amount of surface involved and the attendant constitutional disturbances." Here, however, there is no sort of a parallelism between the inflammation in its character or its extent and the fever and other symptoms which accompany it. It follows, therefore, that until we find some specific remedy capable of neutralizing this poison in the blood, the treatment of croupous pneumonia must be largely symptomatic.

Those who attempt to formulate a method for all cases alike seem to me to be traveling a wrong road. In the present state of our knowledge, at all events, we must regard each case by itself, study all its individual peculiarities, and treat particular conditions as they arise. Some cases of extreme severity will do well upon one or two remedies persistently administered throughout the entire course of the disease. Others will demand a daily, almost an hourly, modification of the treatment to carry them to a successful issue. And that physician will secure the best results who is the quickest to comprehend the true pathological state at the moment, and who is most completely equipped with the knowledge of a materia medica capable of combating that particular state. Especially should it be remembered that the disease is a specific, self-limited one, that its chief force is manifested in the depression of the nervous system, and that therefore the strength and vitality of the patient must be supported above all other considerations. The case which I have reported demanded a varied treatment, and I believe the fortunate result in one who had so little physical strength previous to the onset of the disease is to be attributed largely to the timely modification of the remedies employed and the free stimulation when the heart began to give out.

My own observation leads me to disapprove of the use of the cold pack and the phenol group of antipyretics in this disease. The nervous depression is far too great to endure the extra depression which these therapeutic agents are liable to add. In fact, I do not believe that the fever is itself so dangerous an element as the nervous exhaustion caused by the noxious influence of the toxic substances in the blood. I am sure a moderate control of the temperature is all that is necessary, and that this control can be obtained to a very large extent by the proper stimulation and nutrition of the patient. As in the other specific self-limited diseases, the maintenance of the vital processes by an abundant selected diet should be the prime object in the treatment. In regard to the choice of stimulants, I usually employ alcohol, nux vomica, and strychnine as my favorites. In some cases digitalis seems to act beneficially and strophanthus more so, but I have learned that it is unwise generally to depend upon them alone. Nux vomica and its alkaloid are both respiratory and cardiac stimulants, and when administered in full dosage as often as the conditions require, I believe they will afford the happiest results.

The above case, as well as many others, establishes to my mind the fact that the heart failure of pneumonia is not due to the high fever and lung obstruction, as contended by many of the systematic writers. These factors may operate in a certain few cases, and to a limited extent may have an influence in all; but there are many impressive facts telling in direct opposition to such a view.

In the first place, the fever of pneumonia is rarely a prolonged high fever. It certainly is not as long or as severe as the fever of many other diseases in which heart failure never occurs. The prolonged high temperature of typhoid, for instance, is so debilitating as to affect the whole organism. The general muscular deterioration of pneumonia is quite marked, and yet the parenchymatous elements of the heart, as shown in post-mortem examinations, do not seem to be degenerated any more than the rest of the system. It is difficult to comprehend how a general pneumonic fever could exercise such a selective action upon the heart if we were to accept the doctrine that the weakness of the heart is due to the fever alone. The heart failure, furthermore, bears no proportionate relation to either the extent or severity of the pulmonic lesion. It is frequently quite as rapid and fatal in cases where the autopsy reveals disease of one lobe as where both lungs are affected.

It is sometimes said that the fever merely weakens the heart, while the extra work imposed upon that organ in forcing the blood through the consolidated lung tissue causes it to collapse. This may be true in some instances, but in very many, of which the case reported is a fair example, the heart does not fail until there is a marked subsidence of the fever and the lung is beginning to clear up. Heart failure may exist before or just when the hepatization of the lung is commencing, and, as Loomis has already pointed out, in many other pulmonary affections there is far greater obstruction to the circulation than there is in pneumonia, and yet they are not accompanied by heart failure. As in the matter of the high temperature, so here it may be argued that there is no proportionate relation between the heart failure and the amount of lung tissue obstructed. In my own case only a comparatively small area of the lungs was originally affected, and this was beginning to be clear again when the heart broke down. It is difficult to conceive also how the hepatization of the lung should cause so much extra work for the heart, when during the congestive stage of the disease the blood-vessels were overcharged, and yet the action of the heart was then increased rather than diminished. In the consolidation stage of the process the blood-vessels are usually beginning to be relieved of their extra pressure and the circulatory congestion is on the decline. The air cells of the lungs now become the overcrowded elements. Hence, in this stage there is marked percussion dullness and an increased sense of suffocation; but this has all been brought about at the expense of the previously engorged blood-vessels. The blood stasis is compensated, to a certain extent, by the subsequent œdema and transudations. There will be less oxygenation of the blood on account of the diminished supply of air in the lungs, but it is hard to see just how such a state of affairs could produce a mere mechanical obstruction to the flow of the circulation greater, or even as great, as that of the early congestive stage of the disease. If we divide experimentally the cervical portion of the pneumogastric nerve, the lungs undergo a process of hepatization or consolidation which is not associated with heart failure. And yet it is just at the time when hepatization is going on, and not infrequently after it has begun to recede, that the heart ceases work.

Another objection to this mechanical explanation of the heart failure of pneumonia is the suddenness and periodicity with which this unfortunate event takes place. This was illustrated most forcibly in my own case. One would imagine that as the heart muscle grew gradually weaker under the extra strain, and the lungs became more impenetrable under the consolidation process, the failure of the heart would proceed *pari passu*. But such is not the case. The crisis of the disease occurs more or less regularly at a fixed time and is a comparatively sudden event. In no other disease is there a crisis comparable to that of pneumonia. Other affections have their periods of activity terminated more or less abruptly by death or the beginning of convalescence, when the patient has perhaps reached a state of profound exhaustion, but in pneumonia the crisis is a unique process. All the symptoms continue unabated until a certain period has elapsed, and then in a comparatively sudden, sometimes appalling, manner a complete collapse occurs, with a rapid and remarkable decrease in the temperature and pulse-rate. The picture is not of such a character as to suggest a mechanical explanation; it intimates rather a sudden addition or withdrawal of something abnormal in the circulation. The influence of this something, whatever it may be, is shown pre-eminently through the nervous system. Many think that it is a ptomaine thrown into the blood by the pneumococcus, and that this ptomaine irritates the pneumogastric centers and so causes this nerve to exert an undue inhibitory action upon both the lungs and heart. We know from an examination of the urine that more urea is excreted and that other deleterious substances are retained in the blood that are normally eliminated by the kidneys. As the retention of these poisons in the circulation, however, and the production of the ptomaine by the pneumococcus commence, in all probability, with the commencement of the disease, the question will have to be answered as to why then the heart failure is postponed so long. It is a fact that the heart begins to pulsate irregularly from the very beginning of the disease—so much so that heart insufficiency has been detected by the variations of the pulse within twenty-four hours of the onset of the pneumonia. This is strong presumptive evidence of the heart trouble being due to the appearance of a particular poison in the blood, but, as I have intimated, it does not satisfactorily explain the sudden heart failure that occurs about the crisis of the disease. It is this latter fact that needs further elucidation for the complete solution of the problem. Furthermore, the explanation is wanting as to the selective action of these poisons upon the pneumogastric nerve and nuclei. If they irritated that nerve, it is quite rational to suppose that they irritate all the nerves of the vaso-motor system. The cardiac ganglia would thus feel the same influence as the respiratory and cardiac centers of the medulla. The motor and inhibitory apparatus would be similarly affected, and thus a kind of compensation would be established which we might look to to prevent the usual suddenness of cardiac failure.

The same brief objections seem to me to apply to the explanation presented by Loomis in Pepper's *System of Medicine* and based upon physiological data. This writer argues that the toxic substance in the blood affects the tonic properties of the vaso-motor system of nerves, so as to allow an undue accumulation of blood within the capillary vessels and arterioles; and as this blood is not returned to the heart, there results a diminution of pressure so great as in itself to cause heart failure. The periodic appearance of the crisis and the comparative abruptness of its phenomena, chief of which is the heart failure, seem to me to have been entirely overlooked in this explanation. Professor Loomis admits that the morbific agent may act upon the intrinsic cardiac ganglia as well as upon the medullary vaso-motor centers. This, as we have said, will doubtless derange the strength and regularity of the heart's action. It will produce, however, a sort of compensation between the augmentation and inhibition of that action.

To sum up, then, I believe that the origin of the whole trouble is a poison floating in the blood and irritating the nerves and nervous centers. The true nature of this poison is as little known as that of many of the other specific constitutional diseases. All explanations of its *modus operandi* must be conjectural until we learn more of its nature. I do not believe that it consists simply of the uneliminated matters of the blood, for in uræmic poisoning and other diseases accompanied by diminished elimination we do not have exactly the same phenomena that we do in the crisis of pneumonia. It is a new substance, and in all likelihood a ptomaine produced by some micro-organism in the lungs. This ptomaine begins to affect the nervous system from the very beginning of the disease, and so causes its constitutional disturbances and general symptomatology. It affects all the nervous elements alike, modifying the regularity of their functions, and, for a time, maintaining a kind of compensation between motor and inhibitory forces. This, of course, exhausts all the tissues involved. About the time of the crisis of the disease, if the process does not extend, the micro-organisms cease to pour their poisonous products into the blood because the cycle of their life history is ended. The influence of these products is thus suddenly withdrawn, and the heart, being therefore deprived of that which, up to the crisis, had been overstimulating and otherwise injuriously affecting it, collapses. This, it seems to me, is, in a few words, the simplest explanation of the heart failure of pneumonia. No one can tell, however, how soon changes may be necessary in all or any explanation as a result of future discovery.

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THE PROGRESS OF CHOLERA.

The daily newspapers have for some time past contained accounts of the progress of cholera in Asia and Russia, and it is implied that there is danger of a general epidemic.

During October, November, and December, 1891, cholera was epidemic in Damascus, Beirut, and other places in Syria, and during the early months of this year gained entrance into Persia and Afghanistan. The disease was carried from Meschhed, in northeastern Persia, to Kaachka, a station on the Transcaspian Railway, on the frontier. By means of the railroad and the vessels on the Caspian Sea it was carried to the ports of Baku and Astrachan. From the former city it was carried by the Transcaucasian Railway to Tiflis, and from Astrachan by means of steamboats it has been carried up the Volga.

While it was announced in the middle of June that the Russian Government had begun preparations to prevent the ingress of the disease into European Russia, the methods employed seem to have been of that general Russian character that Mr. Kennan has familiarized us with, for the disease not only entered the country but has been constantly progressing since. The lamentable condition of affairs following the famine in that country during the past winter has afforded an unresisting population for the probable ravages of the disease. However, the careful methods employed by that Government for the repression of all information will probably prevent any statement of the mortality from the disease being published, as was the case with the famine, in the early days of which the civilized world was assured there was no famine.

The existence of cholera in Russia threatens particularly her frontier neighbors, the German Empire, Austria, Roumania, and Bulgaria. Each of those Governments has established a frontier inspection that will probably be thorough, especially in the first two, through which the Russian railroad traffic passes. It is the passenger traffic along these lines that threatens the United States. However, we can feel assured that Russian emigrants will not only be inspected at the frontier, but probably very closely watched at Hamburg, Bremen, and Antwerp, whence they would probably take a steamer for America.

The epidemic of intestinal inflammation occurring in Paris and along the Seine, locally denominated "cholerine," seems to be cholera morbus, and in no wise dependent upon the introduction of the contagion, though some French writers seem to regard it as a *renaissance* of the local epidemic of 1884.

The majority of the emigrants land at New York and Boston. At each of those cities not only are the vessels and passengers subjected to an inspection by the local quarantine authorities, but the emigrants are subsequently inspected by surgeons of the Marine-Hospital Service, and, if any were affected with cholera, they would scarcely evade the double inspection.

Never in the history of the United States has its coast been in a more efficient condition in respect of well-equipped quarantine stations, and the successful manner in which cholera was handled at the New York quarantine in 1887, when the arrangements were much more primitive than now, gives assurance that, if the disease comes to our doors, it will be held in check.

The Secretary of the Treasury has issued orders requiring the disinfection of bales of rags, most of which come originally from Oriental countries, as well as of wool and goat skins from infected regions. Surgeon-General Wyman is alert and well qualified to administer the duties of his office. These require him to give assistance to the health authorities of any State that may make a demand upon the national Government, or even, if he sees that the health authorities of a State are incompetent and that their methods may endanger not only their own but the population of neighboring States, to assume charge of the quarantine of that State. This latter law has never required enforcement; in fact, there are grave doubts of its constitutionality. But, withal, the people of the United States can feel assured that all that science suggests is in operation to prevent the ingress of the disease, and that our country is in but little danger of an epidemic of cholera.

THE HEALTH OF NEW YORK CITY.

THE vital statistics of New York for the year 1891 were made public on July 22d, in a report to the board of health. The total number of deaths was 43,695 in an estimated population of 1,680,000. This is equivalent to a mortality rate of 25·9 (really 26·0) in 1,000, against 24·5 in the previous year. The aggregate mortality in 1890 was 40,103. The heavy increase in the death-tax is, in the report, apparently ascribed to the ravages of epidemic influenza—an explanation that at first blush seems trivial and insufficient, since influenza was in 1890 held to be the cause, in that year also, of an unduly increased mortality. This explanation would be pertinent if the death-rates of the two years were about equal. Bearing in mind that the difference between 1890 and 1891, when all deaths by all causes are considered, was 3,592 deaths, let us look at the contagious-diseases account. Scarlet fever in 1891 carried off 1,220 persons, and measles 1,663. In 1890, the comparable figures were 408 and 730. The respective differences are 812 and 933, and the total difference for these two zymotic causes alone—scarlet fever and measles—is 1,745 deaths. Now, this excess in 1891 over 1890 will, if adjustment is made for increase of population, account for fully 50 per cent. of that alleged influenzal mortality, and we surmise that, if the comparison should be carried into other zymotic causes, it would be found that the steady increase in the death-rate of the city was referable in even greater measure to preventable causes. These are the diseases that our sanitarians classify along with scarlet fever and measles, and concerning which it is maintained that they are ameliorated when there is a competent and cleanly city government. When they are not ameliorated, the fault should be fixed. It has been demonstrated a hundred times that when a city falls into the hands of indifferent and careless health officials, the bills of mortality immediately expand. Mismanagement can not be hidden. Other influences may expand the death-rate, but none more surely than incompetent sanitation. It is entirely probable that an energetic and whole-souled sanitary corps in 1893 could reduce the death-rate to 22 in a 1,000, possibly still lower. This means that the saving in that year would amount to 5,250 lives. The death-rate of London in 1891, if we remember correctly, was 21·5 to 1,000, that of Paris was about the same, while that of Berlin was less than 21 to 1,000. These comparatively—not ideally—low rates have been accomplished in the case of each of these great cities, in the face of many discouragements and difficulties, by sanitary measures, no one of which may not be brought into play for the saving of human life in this metropolis.

Any board of health—in this city or any other—that has for its head a mere politician is like a pyramid built upon its apex instead of its base. It is practically impossible for its best work to be brought out. The community suffers in consequence.

MINOR PARAGRAPHS.

A TRAUMATIC CYST OF THE PANCREAS.

FROM the *Medical Press and Circular* we learn that Mr. Littlewood, of Leeds, has reported to the Clinical Society of London a case of this unusual affection. A man, thirty years old, was thrown from his horse, and the animal stamped upon his stomach with the hind feet. Two weeks later a swelling was noticed in the umbilical and epigastric regions; exploration having been made, a syringeful of dark, bloody fluid was removed. The swelling increased gradually at first, but more rapidly afterward. Pain was pretty constant in the region of the swelling. A week later, aspiration was done, which removed ten ounces of an alkaline, sage-green fluid of the specific gravity of 1·015. Abdominal section was then performed in the median line, above the umbilicus. A large cyst immediately came into view, covered only by the omentum. It had displaced the stomach upward and the transverse colon downward. The cyst was next laid bare and opened, and its wall was stitched to the peritonæum and the deeper layers of the abdominal wall. Forty ounces of fluid were removed, of the same general character as that drawn off by aspiration. The cyst was allowed to drain through the wound, and a fistula remained open for two months, at which time it became permanently closed. An analysis of the cyst fluid, made about ten days after the operation, showed it to contain trypsin, amylopsin, and steapsin, with albumin, metacasein, salts, etc. No interruption of the man's nutritive processes referable to inaction on the part of the pancreas was observed.

PROTOZOA IN CANCEROUS TUMORS.

IN a preliminary note published in the *British Medical Journal* for July 16th, Dr. M. Armand Ruffer and Mr. J. Herbert Walker describe a parasitic protozoon which they have invariably found in carcinomata from various parts of the body, in specimens sent to them from various hospitals. The specimens were hardened in one of the usual solutions for two or three days, then washed in running water for twenty-four hours, then placed in absolute alcohol, and, when ready to be examined, saturated with paraffin according to the Naples method. The tissue was then stained with a nuclear dye, and counterstained with an aniline dye, for which the parasites have a strong affinity. The protozoon consists of a central nucleus, which, according to the reagent used, takes up the stain more deeply than or differently from the remainder of the body. Apparently the nucleus does not possess a distinct membrane; the protoplasm seems to be condensed around it, and from it extremely fine, delicate rays often extend to the periphery of the organism. Scattered through the protoplasm there are small, dark-colored particles which must be distinguished from the pigment granules often found in the parasites. As the organism grows, it distends the epithelial cell, often to several times the original size, though one cell may contain several parasites. The protozoa are present in the cancerous epithelial cells only, and are not found in the fibrous tissue surrounding them in the blood-vessels, or in the lymphatics. They are found in greatest number near the growing edge of the tumor. Both Dr. Metschnikoff and Dr. Sims Woodhead have examined the authors' specimens and confirmed their observations.

THE IDEAL FAMILY PHYSICIAN.

The Hon. Thomas F. Bayard recently addressed the class at one of the medical colleges in Baltimore, having for his theme The Lawyer and the Doctor. It has been his fortune, he says, to be thrown in contact with not a few medical men who have been "as the salt of the earth" in their respective communities. A man who is already eminent by reason of his natural endowments may be said to double his talent by becoming a physician. "It has been my personal fortune," says Mr. Bayard, "to know such a man. It has been my privilege and delight to accompany him in visits where his only medicines were the personal presence and conversation of the man himself. He had shared and had lessened their anxieties; counseled the wayward; cheered the weak-hearted; had rejoiced with them that rejoiced and wept with the weeping. And I have seen such a man so surrounded by an atmosphere of love and trust, holding as it were the heartstrings of a family in his hands, their guide, philosopher, and friend; and then I realized what a moral force in society the profession, properly comprehended and properly followed, was capable of exerting, and how relatively small a part of its usefulness was the administration of medicine."

STATISTICS OF SURGICAL NARCOSIS.

At the recent Congress of German Surgeons Dr. Gurlt, according to *Le mercredi médical*, presented a report on the collected statistics of sixty-two surgeons who had observed 109,230 cases of surgical narcosis, with 36 deaths, or one death in 2,800 cases. In 94,123 chloroform cases there were 36 deaths—1 in 2,614; in 8,431 etherizations there was one death; in 2,891 cases of "mixed narcosis" (with ether and chloroform) there was one death; in 1,381 cases of narcosis with ether and alcohol there was no death; in 2,151 cases of bromide-of-ethyl narcosis there were no deaths; in 215 cases of narcosis by pental there was one death. In 12 cases more than one hundred grammes of chloroform were administered; in 2,913 cases narcosis lasted more than an hour, and in some isolated cases it lasted four and almost five hours. In 25 cases necropsies were made, and almost always old lesions, such as fatty degeneration of the pericardium, adhesion of the pleura and pericardium, tuberculosis, etc., were found.

ICE AND ICE-MAKING.

In the August number of *Harper's New Monthly Magazine* there is an article by Professor T. Mitchell Prudden, on Ice and Ice-making, in which, with much cleverness of phrase and grace of expression, he calls attention to the risk of using ice harvested from unknown ponds and rivers, and the great advantage of employing artificial ice made from distilled water. His closing sentence deprecates the association of disease with "so dainty a theme as ice and its manufacture," but it seems to us that the public will appreciate his temperate presentation of subjects that have been practically found associated by some at considerable cost of anxiety and suffering, if not of life itself.

AN ELECTRICAL EXAMINATION OF URINE.

According to a report in the *British Medical Journal*, Dr. Dawson Turner proposes to determine the clinical characteristics of urine by measuring the electrical resistance of that fluid in a V-shaped tube that is connected with a measuring bridge. He determines the resistance of solutions of urea, sodium chloride, grape sugar, etc., and with these as a basis deduces—to him—satisfactory information regarding urine having a resistance of a various number of ohms. The field is a virgin one for exploration.

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending July 26, 1892:

DISEASES.	Week ending July 19.		Week ending July 26.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	5	0	1	0
Typhoid fever	22	4	36	12
Scarlet fever	72	9	50	8
Cerebro-spinal meningitis	5	10	1	1
Measles	248	28	186	22
Diphtheria	84	23	69	36
Small-pox	12	0	6	4
Varicella	3	0	0	0
Whooping-cough	2	0	0	0

Answers to Correspondents:

No. 384.—See the first volume of Ashhurst's *International Encyclopædia of Surgery.*

No. 385.—The drug is not at all esteemed for the purpose mentioned.

No. 386.—We know of no such word.

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from July 17 to July 23, 1892:*

Munn, C. E., Major and Surgeon. The leave of absence granted for seven days is hereby extended thirteen days.

Greenleaf, Charles R., Lieutenant-Colonel and Assistant Medical Purveyor, will, by direction of the Secretary of War, proceed at the proper time to Montpelier, Vermont, and visit the camp of the Vermont National Guard during the period of its encampment, commencing August 23, 1892.

Corson, J. K., Major and Surgeon, is granted leave of absence for one month, to take effect on or about August 2, 1892, with permission to apply for an extension of one month, provided Banister, W. B., Captain and Assistant Surgeon, shall have returned from leave of absence.

Letters to the Editor.

INFECTION IN BANK NOTES.

Cincinnati, *July 15, 1892.*

To the Editor of the New York Medical Journal:

Sir: The abstract entitled A Bacteriological Analysis of Bank Notes recalls an experience which the late Professor v. Hebra was in the habit of relating when lecturing upon the possibility of carrying contagion by means of bank notes. He was called, in consultation, to see a rich Bojar, sick with confluent small-pox, at one of the hotels in Vienna. After the consultation had come to an end the patient asked Hebra what fee was expected. Hebra said, Twenty florins; whereupon the patient took out a roll of bank notes from under his shirt, that had been resting upon his chest, and handed over two ten-florin notes. When Hebra came to this part of the story he abruptly ended by asking: "Do you think I refused those two bank notes?"

This may not have been bacteriological, but does it not strike one as intensely human? F. Forchheimer, M. D.

Proceedings of Societies.

AMERICAN NEUROLOGICAL ASSOCIATION.

Eighteenth Annual Meeting, held in New York, June 22, 23, and 24, 1892.

The President, Dr. Charles L. Dana, of New York, in the Chair.

The President, in opening the proceedings, said that, in view of the immense amount of work before the session, he should waive the usual address. He briefly reviewed the progress of the association since its inception, making mention of members who had died since the last meeting, and paying special tribute to the memory of the late Dr. Birdsall.

Researches upon the Ætiology of Idiopathic Epilepsy.—Dr. C. A. Herter, of New York, read a paper on this subject. (To be published.)

Dr. B. Sachs, of New York, expressed his appreciation of the excellent and original work done by Dr. Herter. He thought, however, that the mystery which had surrounded the ætiology of idiopathic epilepsy still remained.

Dr. E. D. Fisher, of New York, had seen some of the cases referred to, and thought that the clinical facts tallied with the conclusions so far deduced by the author of the paper. Given an unstable cortex, the speaker saw no reason why such chemical products might not act as the irritating cause of a seizure. In epilepsy primarily due to a special lesion, such irritation would bring on an attack, and there was no reason why the same should not obtain in idiopathic epilepsy. So far as he could determine, the preliminary and subsequent features of the epileptic condition were the same in organic as in idiopathic epilepsy, and putrefactive changes would probably act equally in both.

Dr. F. X. Dercum, of Philadelphia, asked if there were any facts that would go to prove that the ethereal sulphates were really irritative in their action.

Dr. Herter replied that as yet no experiments had been made with a view to determining this point, but the evidence suggested a relationship of the kind mentioned

Dr. Wharton Sinkler, of Philadelphia, thought the paper an exceedingly valuable one. As illustrative of the action of putrefactive changes in producing epileptic attacks, he cited the case of a patient who as a rule had a seizure every month or every two months, but who had found that such attacks could frequently be warded off by active purgation.

Dr. Riggs said that in the use of antiseptic agents he had found the addition of naphthol and charcoal to the salicylates and sulphates of bismuth valuable in reducing the putrefactive changes of a nitrogenous diet. He preferred the albuminous proteids in diet, as being more easily digested.

Dr. Hobson thought it was a question whether the presence of ethereal sulphates might be regarded as a cause or effect of the epileptic condition.

Dr. H. A. Tomlinson emphasized the fact that keeping the bowels open and seeing to the proper exercise of the epileptic insured him fewer convulsions and a less uncomfortable existence.

Dr. Herter wished it understood as his view that the substances he had been isolating acted not by themselves as a cause, but as irritants upon a predisposition. It was important to distinguish between the relation of uric-acid excretion and the excretion of the ethereal sulphates. It had been determined by observation that the proportion of uric acid was largely increased after an epileptic seizure, reaching the maximum in one or two days after the attacks. The ethereal sulphates were, on the contrary, increased at the time or immediately before. This fact, then, suggested the causal relation on the part of the sulphates while the uric acid appeared as an effect. He did not think the seizures could have any effect on the ethereal sulphates, as these were the outcome of putrefactive changes.

Dr. J. J. Putnam said that all these researches went to determine how much more complicated these neuroses were than was usually supposed.

The Sleep Movements of Epilepsy.—Dr. J. W. Putnam, of Buffalo, read a paper with this title. In attempts at localizing the seat of irritation in the brain in cases of epilepsy we had as a guide the history of former injury to the head, of which the proof was in the finding of adherent scars in the scalp, sometimes in a distinct depression in the skull. When there was no history of cranial injury, we often got a history of the character of the attacks, and upon this history of the aura and of the muscles first convulsed we were obliged to rely in localization. Owing to the nature of the disease, dependence had to be placed upon the observation of others in regard to preliminary movements. In the experience of many it had been difficult to obtain clear and positive statements as to the manner of the beginning of an attack. The author had had a patient who was having a convulsion almost every evening. While waiting to observe an attack he had noticed that the patient was restlessly tossing her left arm, while the right one was quiet. The movement was different from the ordinary purposeless movements of restless sleep. It was a slow raising of the arm from the chest or side up over the head, where it would remain for a moment, and then slide down the pillow. This occurred several times. No movements of the legs were observed. There was no convulsion on the night of the observation, but the mother said that during attacks the patient always turned on her left side. The author thought that a series of observations of epileptics during sleep might show similar movements that might be of localizing value. He had made a study in this direction and was satisfied that much could be learned in regard to localizing the seat of trouble by having a record made of the sleep movements. In attempting to interpret these sleep movements he had carefully read the literature on epilepsy, but could find no mention of observation in this direction. Hughlings Jackson had assumed that there were three levels in the motor nervous system, which he had called the highest, the middle, and the lowest. The highest, chiefly motor, was the frontal lobes; the middle level was composed of the portion which we understood as the motor region, comprising the ascending frontal and parietal convolutions and the corpus striatum; the lowest level consisted of the cornua of the spinal cord, Clarke's column, and Stelling's nucleus. Starting with this theory, the author ventured the following explanation: When the patient was in a profound sleep, all these levels were in a state of functional rest and there was quiet sleep undisturbed by movements, as no stimulus was transmitted to the muscles. In a less profound sleep—one in which the patient was restless—he had assumed the highest level to be at rest and no longer exerting an inhibiting control over the middle level. This in a healthy person would show itself by general restlessness. In an epileptic, in whose motor region there was an irritated area of greater excitability than normal, it was assumed that it was less profoundly asleep than other areas. Hence in such conditions there might be pronounced and definite movements occurring during sleep, and limited to the limb controlled by the irritated area. These movements might occur in only a few patients, and in those only when slumber was disturbed. Whether or not he was right in his interpretation, and whether it would be considered safe to localize a lesion from sleep movements alone, he could not say, but wanted to bring the question before the society for discussion.

Dr. J. J. Putnam, of Boston, thought that in epilepsy, as a rule, the lesion consisted of diffuse sclerotic changes acting diffusely as poisons did. The focalized expression of these changes indicated that certain portions of the brain were, or had become, relatively more influenced by the morbid changes. Operative procedures were not likely to succeed if this theory was correct. He should be disinclined to operate for localized movements occurring during sleep.

Dr. Sachs thought that sleep movements might point to the fact that the center governing the part moved in sleep was more irritable than normal. He was reluctant to attach too much value to the sleep movements as a symptom, but supposed we should now hear much more on the subject than heretofore.

Dr. J. W. Putnam had not felt that it would be justifiable to have operations undertaken upon observations of the sleep movements alone; still, he thought they indicated the seat of irritation, and hence there was added one more strand to the rope of evidence.

The Seat of Absinthe Epilepsy.—Dr. Isaac Ott, of Easton, Pa., read a paper on this subject. As yet, he said, the seat of epilepsy had not been revealed by either coarse or fine anatomy, but much more had been accomplished by physiology in the elucidation of convulsive phenomena. The author reviewed the various experiments that had been made from time to time in localizing convulsive movement, but dwelt especially upon the absinthe tests. One observer had found that after injection of two drops of essence of absinthe into the jugular vein there followed these conditions: The facial muscles underwent a single clonic spasm, passing into a state of tremulous tonic spasm. This order of convulsion passed rapidly down the body until the tonic spasm in the limbs was extremely marked. After a short period tonic spasms gave way to a long series of clonic twitches. Accompanying these convulsive phenomena there was profuse salivation and sometimes an escape of urine, and in cases in which narcosis had not been employed unconsciousness and coma were early symptoms. The effect upon the spinal cord was also tested by means of the electrical method, with both the galvanometer and the electrometer. The results showed that the employment of absinthe gave maximal electro-motive effects in the sciatic nerve by the overwhelming discharge of the highest cortical centers. It was also observed that absinthe caused an additional electric excitation of the centers, producing more energy. Absinthe produced a typical epilepsy not only in animals, but also in man. It was evident that in this medicament we had a most valuable means with which to study the origin of convulsive disorders. That the convulsions were not due to circulatory changes was an excluded factor. There remained yet the determination of the mode of origin of the convulsion in the nervous system. It was believed by some to originate in the spinal cord, but this theory had been exploded. If the whole cortex was removed in an animal, tonic convulsions ensued. If the corpus striatum or the optic thalamus was divided, still spasms of a tonic nature continued with no clonic stage. The same result ensued after removal of the corpora quadrigemina; if, however, the pons was divided, all convulsive acts ceased. If in an animal the motor centers were removed on one side, tonic spasms took place on the opposite side from that of the lesion, while tonic and clonic convulsions came on on the side of the lesion. The convulsive movements upon the side opposite the lesion were weaker than when the cortex was intact. Irritation of the cortex called out tonic and clonic movements. Further, if the cortex was cut off and the underlying fibers were excited, only tonus was obtained. If a fit was in full progress, shaving of the cortex stopped it immediately. These facts proved that the seat of origin of the tonic and clonic movements in epilepsy was in the cortex, and that their expression took place mainly by means of ganglia seated in the pons. That no clonic convulsions could be observed after removal of the brain in front of the pons was not always a fact had been proved by the author in one case in which the injection of essence of absinthe produced violent clonic spasms. The word cortico-pontal might express the origin of convulsive epilepsy due to absinthe.

Separate Provision for Epileptics, both Public and Private.—Dr. Henry R. Stedman, of Boston, read a paper on this subject. He entered a plea for the exclusive care of epileptics in special establishments, on the colony plan, throughout the country. He characterized epileptics as the most neglected class of sufferers by disease, and deplored the fact that so much attention had been paid to the pathology and medical treatment and so little to their care and protection. The amelioration by proper medical supervision in surroundings where their lives could be regulated and their capabilities in the way of employment developed seemed not to attract the attention it ought. That the plan was practicable the colonies for epileptics in other countries, particularly in Germany, had proved. The dangers to these patients from exposure and accident of various kinds were very great, while the ostracism of many of them from ordinary intercourse with their fellows, from the schools and from places of worship and amusement, and, above all, the fact that they were debarred from obtaining employment on account of the malady, rendered their lot particularly hard. The danger to the community, too, from certain epileptics was touched upon. The deplorable condition of these unfortunates in almshouses, where there were large numbers in most of the States, could not be too severely characterized. The usual practice of caring for these patients with the insane in lunatic asylums was a great disadvantage to both classes. The epileptics were not legitimate recipients of such care, and prevented the insane from receiving the full amount of attention they should have, while they themselves were deprived of suitable healthful employment. Dr. Stedman also gave a short account, illustrated by charts and views, of the famous epileptic colonies at Bielefeld, in Germany, which he had recently visited. He closed his remarks with the hope that some step might be taken in this country to establish like institutions.

Dr. Bullard said that in Massachusetts steps had already been taken to further the establishment of suitable special institutions for the care of epileptics. A bill had been prepared by a special committee and presented in the proper quarter. It was hoped and believed that next year this bill would be passed and the money forthcoming to secure the end in view.

Dr. Frederick Peterson, who is the pioneer of the present movement in New York State, urged the necessity of energetic support of the measures already taken, and said that if his hopes were realized, one hundred and twenty thousand epileptics would have opportunity for instruction and of leading useful lives.

Dr. Fisher said he hoped the movement would meet with every success. He did not know a more helpless, hopeless set of human beings than these epileptics fed on bromides and without occupation. Treatment did but little good. What they needed was opportunity for work.

Dr. W. M. Leszynsky asked if it was intended to include the care of persons with chronic epileptic insanity. He should think these formed an undesirable class to colonize with the ordinary epileptics.

Dr. Tomlinson said there was no more unsatisfactory class of patients in institutions for the insane than the epileptics. Not one of these institutions was suitably equipped to care for them. If they were associated with the violent and demented, their lives were rendered still more uncomfortable. Unless they were themselves demented, epileptics were generally alive to their condition and surroundings, and it was from them that complaints generally came. It was very necessary that they should receive special attention. There was always a tendency on the part of this class to eat voraciously. Constipation was a frequent condition among them, and the self-infection thereby produced increased the frequency of the seizures. If separate treatment, occupation, and proper diet could be provided, epileptics could doubtless lead more comfortable, and in many cases really useful, lives.

Dr. Sachs was in favor of provision by the State for these patients, but thought that much must be done by private endeavor. There was a well-to-do class among the epileptics most difficult to dispose of. Many of the younger epileptics had no opportunity for proper education. It had seemed to the speaker that for these there should be provided private institutions where it would be made an object to give distinct educational advantages.

The President said he had made some investigations in the matter. He did not believe that there should be any State provision for epileptics, at least not at present. There were now an enormous number of defective institutions under political influence. If there were added fifteen thousand epileptics to the fifteen thousand insane, the condition of the former class would be by no means benefited. While the institutions for which Dr. Stedman pleaded were undoubtedly needed, effort should be made toward interesting private citizens in their support.

Dr. Stedman said that it would, of course, not be wise to associate violent epileptics with those of the milder class. Buildings could, however, be provided on the colony where the severe cases could be cared for. It would not be expedient to take the mild ones from the asylums and leave the worst ones there. He agreed as to the desirability of charitable work in the scheme, but it seemed difficult to effect the desired end in this way, from the very great lack of interest in this unfortunate class, and it was only by State care that there was hope of benefiting them.

The President thought that a direct opinion on the subject by the association might bear weight with the Legislature, and hoped that some such expression would be formulated. The following resolution was, on motion of Dr. Stedman, then adopted: "That it is the unanimous sense of the American Neurological Association that the proper care of the epileptic class, so long delayed, be urged upon the public, upon State authorities, and especially upon all interested in the care of the sick and defective poor, whereby they may be relieved from asylums and almshouses, and may receive the required care in such separate establishments as their deplorable situations demand."

A New Symptom indicating Combined Cerebellar and Spinal Inco-ordination.—Dr. E. C. Spitzka, of New York, read a paper with this title. The attitude and appearance of a patient so affected was characteristic of that form of pseudo-hypertrophic paralysis in which the atrophy of the arms decidedly antedated wasting in the lower extremities. It was this patient's actions that had first called the author's attention to the peculiar movements which he had since been able to collate. Whether dressed or undressed, under examination and observation or not, the patient, a child, had a habit of making a sudden motion toward the nose with his right hand, thumb and fingers flexed, the fingers but slightly so, such as certain persons in the lower walks of life were apt to indulge in when sniffing. At the same time there was a straightening out in his attitude, as if all the muscles involved in maintaining the erect posture were associated in the act. A peculiar expression would cross his face, the head and eyes being turned toward the approaching finger. The child had also certain imperative conceptions and fear of going under a certain tree, also terror of a Newfoundland dog at the later hours of the day, while at other times he showed a great affection for it. He had also a fear of the stairs, and even on a dead level on the ground floor of the house he had an impression as of a yawning precipice. The mother had informed the author that there were four members of her husband's family in insane asylums—a brother, sister, first cousin, and grandfather. The uncle and cousin had shown exactly the same motion of the hand. The father of the child had some slight ataxia in the hands. The child had progressed as these patients usually did, had come to suffer from a more marked grade of imperative conceptions, morbid fears, and a slight grade of imbecility. Since then the author had seen four other patients in whom similar strange automatic movements were noticeable. In two cases they were bilateral, limited to the arms; in the third, associated with salaam movements of the head and neck; in the fourth there was a predominant effort to make a hop-skip-and-jump action. The fourth case was the only one in which there had been any doubt as to the interpretation of the symptoms, apart from the bad family history. He had had a motion strongly resembling that of the first patient, exceeding it, however, as regarded the turning of the head and neck; the index finger alone was raised and slightly curved, and the patient would start, at the rate of two or three times a minute, imitating a motion which one would make in saying: "I hear a noise there." There was a fixed hallucination of sound located, the patient said, exactly six inches in an accurately defined direction from the right parietal boss. This had no relation which could be elicited with the extising paranoia. The patient eventually died of diarrhœa, and an autopsy was obtained. No structural disease of either the cord or the brain could be found. There was a heterotopia parallel to the claustrum at the region corresponding to the posterior slope of the island of Reil on the left side, together with some peculiarities of the gyri, which were regarded as abnormal. They were asymmetrical and atypical.

A Further Contribution to the Pathology of Arrested Cerebral Development.—Dr. B. Sachs, of New York, read a paper with this title. The gross cerebral lesions of childhood had received much attention of late years, and the conditions that led to the development of paralysis, of epilepsy, and of idiocy, or possibly of all three conditions combined, were tolerably well understood. Among the large number of cases of this description, one small group had attracted the author's special attention. It included possibly the severest form of idiocy, the palsy or epilepsy, if present, being of secondary importance. It ran in families, a number of children of the same family being afflicted in the same way, the disease running the same course in each case; the children appeared to do well until about the fifth to the eighth month, when a retrograde movement would set in. All the cerebral functions, sensory and motor, gradually became impaired. The child soon became idiotic, blind, and more or less paretic, and death took place from marasmus.

The patient who was the chief subject of the paper was a sister of the child whose brain the author had reported upon five years before. The history of the case was as follows: The child, when first seen, was thirteen months old. It was born at full term, a perfectly healthy infant, was nursed at the breast, and had appeared to be developing finely until the age of eight months; from that time on there had been steady retrogression. Close examination showed that the child could not hold up its head, that it could not sit up unless supported, that it had no perception of light, and that the pupillary light reflex was entirely gone. There was slight sense of hearing, but it could not distinguish between sounds. There was some spastic condition of the upper and lower extremities. There were no spontaneous movements of any sort, the child sitting listlessly on the nurse's lap. The knee-jerk on each side was distinctly exaggerated, no ankle clonus was obtainable, and the plantar reflex was increased. The resemblance to the first child was very close in every respect, except that the paresis was more spastic in character. The condition had grown steadily worse, and the child died of extreme marasmus at the age of twenty months. A week before death there had been considerable fever and several convulsive seizures, but these were the only ones that had occurred during the entire course of the disease. An autopsy was performed twenty-two hours after death. In order to determine whether there was latent syphilitic disease, the author had made a most careful examination of all the organs of the body and of the larger glands, with negative results. The skull was symmetrical, of good size, but unusually thin; the fontanelles were closed, but still transparent. The dura was adherent to the skull, so that the brain had to be removed with the calvaria. As in the case of the first child, the brain was firm to the touch—almost as hard as a brain that had been in Müller's fluid for some weeks. The pia could easily be detached, and the cortex, though pale, presented no unusual appearances. The spinal cord presented no abnormal conditions. Very careful studies were made of microscopic sections of the ganglia, pons, medulla, and cord. The chief changes, and very marked ones, were found in the cortex, in all its regions to an equal degree. The morbid condition was an exact reproduction of that found in the first case. In all the sections examined not a single normal pyramidal cell could be discovered. The cell bodies were altered either in shape or in general appearance. The cell nuclei and the nucleoli were distinct enough, but were surrounded by an altered cell body which did not properly take the ordinary stains. The neuroglia cells appeared somewhat increased and the tissue rather dense. The blood-vessels were present in at least the usual proportion, and most of them were filled with blood, but there was no sign of any active inflammatory condition.

Comparing the results of the examination in this case with the facts published a few years ago, it was found that the arrest of cerebral development was practically an arrest of cortical development, a true *agenesis corticalis*, but by what immediate force it was brought about it was difficult to say. In the first case the history of traumatism during pregnancy was looked upon as a possible cause, but in the present instance that factor was wanting. One had to fall back upon the neurotic taint, but this could not be proved to have existed in this case. From the results of the two autopsies it might be maintained that the chief morbid changes underlying that form of idiocy which was associated with blindness, and which led to a prompt and fatal termination, was to be found in the cells of the cortex. This case could hardly be dignified as a distinct type of disease, but it represented the most pronounced form of idiocy and of arrested cerebral development.

The Surgical Treatment of Epilepsy.—Dr. Sachs also gave a record of his joint experiences with Dr. A. G. Gerster in the surgical treatment of epilepsy. The patients operated upon had been selected with considerable care. The cases were either of distinctly traumatic origin or those in which a strictly localized convulsion pointed to a limited focus of disease. Patients with general epilepsy of non-traumatic origin had not been subjected to operation. In regard to the determination of the brain areas to be operated upon, it had been the custom to map out upon the skull with the greatest care, in advance of the operation, the exact site of the various divisions of the motor areas. The author was now of the opinion that in most cases this was quite unnecessary, and that the application of the faradaic current to the dura would help to localize centers much more accurately than any of the customary rules. He felt so certain of the absolute reliability of this procedure that he would be willing to have the skull opened at any reasonable point over the motor areas, and by means of the faradaic tests undertake to determine the exact location of the centers. While he was very certain that this method would be found entirely satisfactory in all cases of ordinary brain lesion, he had a suspicion that in cases of tumor, or in cases in which the brain tissue had been seriously altered by disease, the morbid brain might not respond so promptly to the current. In such cases the older method of determining the areas would have to be resorted to. The first and most notable result of the operations, as recorded by these observers, was that they could not report a single decided cure. In several of the cases there had been a marked diminution of the attacks immediately after the operation, and in some the improvement had lasted a few months, but in every case the attacks had recurred after a lapse of several months or even less time. If we sought for some special reason why operative procedures had accomplished so little, it was to be found in the fact that the patients came under notice after the epilepsy had been established for many years. It was now generally conceded that, though a focus of disease was the actual cause of the epilepsy, this epilepsy did not manifest itself, as a rule, until widespread changes had appeared throughout the entire brain. The time that elasped between the infliction of the initial lesion and the development of these secondary changes corresponded quite accurately with the period of time between the injury or the initial disease and the development of epilepsy. Excision of the cortical tissue after the establishment of epilepsy seemed to be of questionable merit. The only hope from surgery was in prompt interference in all cases of injury to the skull to remove the focus of disease before secondary changes had been set up. It was the intention of these observers to continue this series of operations in the hope of being able to distinguish those cases in which the operation promised good results. In the present state of their knowledge the prospects were gloomy, but it was their opinion that the way to cure epilepsy was to prevent its development by early operation.

Dr. Mills thought it was the experience of most of those present that there was little new to add to the subject of Dr. Sachs's paper. They had been unable to report more than a few apparent successes. He had reported two cases at certain periods after the operation, and in one the result was absolutely valueless. In the other the patient, up to the time the speaker had last heard of him, had had no return. It was now two years since the operation, prior to which, however, the patient had had but few attacks and the disease had existed only a very few months. The speaker was surprised at the results obtained by Dr. Sachs with faradization of the dura. He had not done this much, except accidentally, and then the effects had seemed of a general character instead of localized. He should deem faradization of the dura a somewhat uncertain guide.

Dr. Angel said he should like to get views as to the probable after-results from pressure. In a case of his there had developed a cerebral hernia. He believed, however, that a more fortunate result might have been looked for if the surgeon had not insisted upon replacing the bone. He did not see the advantage of this over the fibrous-tissue covering.

Dr. J. J. Putnam said that in Boston they had had some half dozen cases of brain operations for epilepsy, and all of them had terminated in recurrences of the condition. In one case the attacks had remained absent for a year and a quarter, and that patient's general condition had improved. The speaker thought that, while on the one hand something ought to be done in early infancy to remove diseased portions of the brain, evidence was wanting that epilepsy would be thereby prevented. Taking everything into consideration, it did not seem, except in rare conditions and when patients understood that the relief would be at least but temporary, that operative procedures could be undertaken with any great enthusiasm.

Dr. P. C. Knapp had not seen any beneficial results from the treatment. From local injury there supervened a localized epilepsy, due, however, to changes in the brain, and he believed that in many of these cases by the time the first convulsion appeared there were already extensive changes in the brain itself. He had seen the condition develop after exceedingly slight trauma. The operation under the present method was not formidable, and the patient readily recovered, but the hole in the skull must be borne in mind as likely to expose the brain to future injury. It could not be denied that trephining had its dangers.

Dr. Dercum said that organic changes were probably set up by the trephine. As to the excision of portions of the cortex, he placed himself in line with the more conservative.

Dr. Sachs said that, in the event of any difficulties being met with in obtaining local muscular contractions upon faradization of the dura, there must be some mistake in the technique. It was a fact that through the dura there could be produced a series of single contractions of just those parts the centers of which it was desired to excise. This could be done upon man just as well as upon the monkey. Dr. Knapp had spoken of localized convulsions due to general changes in the brain. The speaker did not entirely agree to this view, but thought it more likely to be localized convulsion due to localized lesion, though there might exist changes on the brain at that time. It was a question whether an operation promised much even in traumatic cases, unless undertaken in the earliest possible stages. The question of urging surgeons to operate quickly in all such cases was the last straw he now had to cling to. He did not believe the trephine dangerous, and if abscesses of the brain developed, there was a mistake somewhere in the surgery.

(*To be continued.*)

Book Notices.

Traité de médecine. Publié sous la direction de MM. Charcot, Professeur de clinique des maladies nerveuses à la Faculté de médecine de Paris; Bouchard, Professeur de pathologie générale à la Faculté de médecine de Paris, et Brissaud, Professeur agrégé à la Faculté de médecine de Paris. Par MM. Babinski, Ballet, Brault, Chantemesse, Charrin, Chauffard, Gilbert, Guinon, Legendre, Marfan, Marie, Mathieu, Netter, Oettinger, André Petit, Richardière, Roger, Ruault, Thibierge, Thoinot, Fernand Widal. Tome II. Par MM. L.-H. Thoinot, Louis Guinon, G. Thibierge, A. Gilbert, Richardière. Tome III. Par MM. A. Ruault, A. Mathieu, Courtois-Suffit, A. Chauffard. Avec figures dans le texte. Paris: G. Masson, 1892. Pp. 678, 987.

The nature of the various subjects treated of in the second volume of this great work does not admit of any decided display of personality on the part of their authors, who have therefore contented themselves with a judicious use of such material as was most readily obtainable by them. In the article on typhus fever we find principally data derived from Murchison, to which the author, Thoinot, adds the results obtained by him in his laboratory experimentations. He has found that the blood of typhus-fever patients is not inoculable in small animals—such as the guinea-pig, the pigeon, the rabbit, and the mouse—and agrees with Cornil and Babes in believing the organism of Hlava to pertain rather to a secondary than to a primary infection.

The eruptive fevers are treated of in a manner indicative of great conscientiousness by Dr. Louis Guinon, demonstrating his mastery of the French authorities and his long hospital experience.

The section devoted to venereal and skin diseases, by Georges Thiberge, much more extensive than is usually the case in treatises on general pathology, follows fundamentally the general arrangement adopted by the dermatologists.

The pathology of the blood is entered into by Gilbert with a desire for accuracy that savors of Professor Hayem. His chapters on anæmia and leucocythæmia are of great importance and interest.

To the usual chapters on intoxications Richardière adds one on poisoning by alimentary substances, dependent in nature either upon the alkaloids generated by these various substances in their metamorphoses or directly derivable from the pathological condition of the alimentary canal.

The authors of the third volume treat of the pathology of the digestive tract and its associated organs. As in all French books, we find the subject-matter perfectly co-ordinated and digested, and yet, at the same time, treated in such a colloquial manner that we are taken, as it were, into the author's confidence, so that, although the facts may many of them be new to us, their being so is not brought prominently home to our consciousness. Take, for instance, Chauffard's article on the diseases of the liver. We find all aspects of the subject considered with the greatest possible minuteness, and yet we are not weighted down by the details, because each affirmation is apparently the reply to an inevitable bedside question. Our predominating feeling, therefore, is that of gratification at having our more or less newly aroused curiosity so charmingly satisfied. We are talked to in a friendly fashion, and not after the manner of the pedagogues. As in the French hospitals, so in the books emanating from them, it is assumed as a matter of course that the readers are intelligent human beings who may differ slightly in degree of knowledge from the teacher of the moment.

As a result of this assumed attitude, we find ourselves on a quasi-royal road to learning, and are essentially unconscious of any effort in assimilating the new knowledge.

Treatise on Gynæcology, Medical and Surgical. By S. Pozzi, M. D., Professeur agrégé à la Faculté de médecine, etc. Translated from the French Edition under the Supervision of and with Additions by Brooks H. Wells, M. D., Lecturer on Gynæcology at the New York Polyclinic, etc. Vol. II. With One Hundred and Seventy-four Wood Engravings and Nine Full-page Plates in Color. New York: William Wood & Co., 1892. Pp. xiv–583.

There have been comparatively few efforts on the part of the writers of books to submit their subject-matter to the criteria of pure reason unadulterated by the false quantities of tradition.

Who does not remember how in his student years he despairingly turned the leaves of his text-books, hoping a teach new effort to understand the subtle differences displayed by their authors as to cognate diseases with an apparently identical symptomatology? Now that Pozzi has given us a treatise on gynæcology in which differences are not sought for when none exist, and in which the subjects are treated of in a purely rational manner, we ask ourselves the questions, Why it has not been done before? and How did he come to do it? As with Columbus's egg, everything is easy when you once know how, but to find your road you have to fight your way through many brambles. The brambles in Pozzi's life have been constituted by the many surgeons who from all parts of France, as well as from other countries, periodically congregate in Paris to form the Congress of which our author is secretary. Each man is expected to speak of that which he knows practically. No one is expected to make an erudite speech full of many wise saws gathered from the authors. Each man has led a life entitling him to have a personal opinion, which he submits to the judgment of his peers. It is no one's pleasure or duty to comment flatteringly on the remarks of his neighbor, and it is not considered appropriate to antagonize him by being unduly incredulous of the facts he adduces. The worship of the great "I am" probably exists in France, as elsewhere, but the fear of ridicule is as great as the wit is keen.

It is in this atmosphere of free discussion that Pozzi wrote his book, which is a monument with his name rightfully inscribed on it. The strong individuality of the man has been merged in that of the faithful workman, who devotes his entire energy to the perfecting of his masterpiece. The numberless engravings that illustrate the subjects are something unusual in French treatises on gynæcology, and, we are inclined to believe, have been suggested by English usage. These engravings have not been very faithfully reproduced in the American edition, which is to be regretted, inasmuch as the faithfulness of the originals was worthy of the engraver's best skill. The colored plates interpolated in the American edition offend the eye by their florid coloring, which is hardly "after nature." The book is admirably translated and does great credit to all concerned.

BOOKS, ETC., RECEIVED.

Regional Anatomy in its Relation to Medicine and Surgery. By George McClellan, M. D., Lecturer on Descriptive and Regional Anatomy at the Pennsylvania School of Anatomy, etc. Illustrated from Photographs taken by the Author of his own Dissections, expressly designed and prepared for this Work, and colored by him after Nature. In Two Volumes. Vol. II. Philadelphia: J. B. Lippincott Company, 1892. Pp. xiv to 414.

A Treatise on Diseases of the Nose and Throat, in Two Volumes. By Francke Huntington Bosworth, A. M., M. D., Professor of Diseases of the Throat in the Bellevue Hospital Medical College, New York, etc. Volume II—Diseases of the Throat. With 3 Colored Plates and 125 Wood-cuts. New York: William Wood & Company, 1892. Pp. xiv–3 to 832.

Cardiac Outlines for Clinical Clerks and Practitioners, and First Principles in the Physical Examination of the Heart for the Beginner. By William Ewart, M. D. Cantab., F. R. C. P., Physician to St. George's Hospital, etc. With Sixty-two Illustrations. New York and London: G. P. Putnam's Sons, 1892. Pp. x to 165.

On the Respiratory Changes of the Intrathoracic Pressure, measured in the Mediastinum Posterior. By Dr. S. J. Meltzer, New York. [Reprinted from the *Journal of Physiology.*]

Cases requiring Abdominal Operations in the Service of Dr. J. F. W. Ross at the Toronto General Hospital during the Summer of 1891. [Reprinted from the *American Journal of Obstetrics and Diseases of Women and Children.*]

Abdominal Section for Purulent Peritonitis resulting from Ectopic Gestation. By James F. W. Ross, M. D., Toronto, Canada. [Reprinted from the *American Gynæcological Journal.*]

Diagnosis and Treatment of Abscess of the Ano-rectal Region. By Edward Clark, M. D., Buffalo. [Reprinted from the *Buffalo Medical and Surgical Journal.*]

Report of Twelve Cases of Herniotomy. By B. M. Ricketts, M. D. Cincinnati. [Reprinted from the *Lancet-Clinic.*]

Errors in Ventilation. By William Henry Thayer, M. D., Brooklyn N. Y. [Reprinted from the *Sanitarian.*]

The Rotary Motion and Centrifugal Power of the Circulating Blood in the Larger Arteries. By C. H. Rosenthal, M. D., San Francisco, Cal.

Remarks on the Nature and Treatment of Tuberculosis. By E. L. Shurley, M. D., Detroit. [Reprinted from the *Proceedings of the Michigan State Medical Society.*]

Transactions of the American Dermatological Association at its Fifteenth Annual Meeting held at the Shoreham Hotel, Washington, D. C., on the 22d, 23d, 24th, and 25th of September, 1891, in connection with the Congress of American Physicians and Surgeons.

Twenty-eighth Report of the Trustees of the City Hospital of the City of Boston, with Reports of the Superintendent, the Medical and Surgical Statistics, Rules for Admissions and Discharges, Prospectus of Training School for Nurses, Rules for the Convalescent Home, etc. For Thirteen Months, January 1, 1891, to January 31, 1892.

The Wife and Mother: a Medical Guide to the Care of her Health and the Management of her Children. By Albert Westland, M. A., M. D., C. M. Philadelphia: P. Blakiston, Son, & Company, 1892. Pp. xiv to 282. [Price, $2.]

Deformity of Hip and Knee following Acute Osteitis; Lumbar Abscess resembling Incipient Hip-joint Disease. By H. Augustus Wilson, M. D., Philadelphia. [Reprinted from the *American Lancet.*]

The Necessity for Early Correction in Congenital Club-foot. By H. Augustus Wilson, M. D., Philadelphia.

On the Sterilization of Milk at Low Temperature, with Description of a New and Simple Apparatus applying the Principle of Pasteurization. By Rowland Godfrey Freeman, M. D., New York. [Reprinted from the *Medical Record.*]

Hysteromyomectomy, with a Report of Four Cases. By Hunter Robb, M. D., Baltimore. [Reprinted from the *Johns Hopkins Hospital Bulletin.*]

A Study of Typhus Fever; Clinical, Pathological, and Bacteriological. By John Winters Brannan, M. D., and Timothy Matlack Cheesman, M. D., New York. [Reprinted from the *Medical Record.*]

The Vertigo of Arterio-sclerosis. By Archibald Church, M. D., Chicago. [Reprinted from the *Medical News.*]

Inert Tubercle Bacilli—Other more Dangerous Organisms in the Sputum and Lungs. By F. J. Thornbury, M. D., Buffalo, N. Y.

Influenza and the Latest Bacteriological Researches. By F. J. Thornbury, M. D., Cincinnati. [Reprinted from the *Medical Record.*]

Du traitement par l'électrolyse des déviations et éperons de la cloison du nez. Par J. Bergonié et E. J. Moure. Paris: O. Doin, 1892. Pp. 3 to 70.

Reports on the Progress of Medicine.

NEUROLOGY.

By FREDERICK PETERSON, M. D.

On the Nerve-roots of the Lumbo-sacral Plexus.—C. S. Sherrington (*Proc. of the Roy. Soc.*, No. 308), experimenting on monkeys (*Macacus rhesus*), frogs, cats, rabbits, rats, and dogs, has arrived at results in harmony with the early work of Eckhardt (1849). Many muscles are supplied by three spinal roots, some by two. Individual variation is frequent. Excitation of the same spinal root does not always throw into action the same muscles, even in individuals of the same species, sex, and age. Concerning the question whether a muscle, when supplied by several nerve-roots, is districted, so that one portion of the muscle is innervated by one root and another by another, the author decides that this is the case, although there is always a large mutual overlap. This was very striking in some of the larger muscles, like the *sartorius* (third and fourth *macacus*) and the *sacro-coccygeus superior* (seventh, eighth, and ninth, cat). In the anal sphincter there is an overlap of the motor distributions of the right and left halves of the body. The *sphincter ani* is supplied by four nerve-roots—two on the right and two on the left. Any three of these may usually be cut through without producing patulousness or asymmetry of the anus. Conversely, excitation of any one of the efferent roots supplying it causes contraction of both right and left halves of it. But the innervation of the bladder is not of a bilateral character.

On the Causation of Diphtheritic Paralysis.—In a chemical examination of the blood and spleen of eight patients who had died of diphtheria, Dr. Sidney Martin (*ibid.*) discovered two classes of substances not normally present in the organism—viz., (1) two albumoses or digested proteids, proto- and deutero-albumose, giving the same chemical reactions as the albumoses of peptic digestion, and (2) an organic acid, soluble in absolute alcohol and water, to a less extent in amyl alcohol, and insoluble in ether, chloroform, or benzene.

These albumoses injected into the circulation of healthy rabbits produce fever. Repeated doses, besides producing fever, cause a paralysis which may come on in two days, but which is more often apparent at the end of six or seven days, and may be delayed for twenty days if the doses are small. The paralysis is progressive, and if the dose be large enough, the animal dies in syncope. Animals that do not die may have syncopal attacks affecting the respiration, but recover from these. Five animals were experimented upon and all exhibited the same symptoms. The nerves, on examination after death, were stained with osmic acid and counter-stained with borax-carmine. They showed extensive degeneration of the kind described by Gombouet as segmental degeneration. The central nervous system was normal. The degeneration affects a segment of a nerve. The fibers at that part lose their white substance of Schwann, and the axis cylinders become attenuated and, in many cases, ruptured. If the axis cylinder is ruptured, the nerve fiber below that point undergoes Wallerian degeneration. All nerves in the body may be affected—motor, sensory, and visceral (sympathetic).

The organic acid is not so toxic as the albumoses and does not cause paralysis, although it brings about a moderate degree of nerve degeneration.

As regards diphtheritic membrane, the author states that it consists chemically of fibrin, hetero-albumose, proto- and deutero-albumose—*i. e.*, that it is in a state of digestion. From it he obtained an extract which produced fever and paralysis and the nerve degeneration also, but was three to five times as toxic as the albumoses previously mentioned. He regards the poison as identical with that isolated by Roux and Yersin and as a ferment. Thus the *Bacillus diphtheriæ* growing in the membrane excretes a ferment which, being absorbed, digests the proteids of the body, forming albumoses which produce fever and paralysis.

Two Cases of Klumpke's Paralysis.—Miss Klumpke was the first to determine the nature of a paralysis combined with atrophy and degenerative reaction of the thenar and hypothenar eminences and of the interossei, associated with anæsthesia in the regions of the ulnar and median nerves, and with oculo-pupillary symptoms (myosis and retraction of the eyeball). She found that the lesion was in the roots of the first and second dorsal nerves, the eye changes being due to complication of the ramus communicans of the first dorsal root.

R. Pfeiffer (*Dtsch. Ztschr. f. Nervenh.*, i, 14) describes two cases of this kind observed in Lichtheim's clinic at Königsberg. In the first a lymphosarcoma in the posterior mediastinum caused degeneration of the first dorsal root, ramus communicans, and second dorsal root in the left side, by pressure. In six months the typical picture of a Klumpke paralysis developed. Examining the spinal cord after death, a narrow degenerated zone was found extending upward from the second dorsal root for a short distance, lying close to the posterior horns at the first and second roots, and the posterior roots of both these nerves were degenerated.

The second case presented only for a short time the clinical picture of a Klumpke paralysis. There was a sarcoma of the vertebral column in the region of the three lower cervical and first dorsal nerves. First, there was total paralysis of both legs, after which the Klumpke form of paralysis appeared, followed later by more widespread paralysis of the arms.

At the autopsy was found at the level of the seventh vertebra a cicatrix of the spinal cord, with total disappearance of the normal configuration and great diminution of the transverse sectional area. Above and below this constriction was marked secondary degeneration, which made it difficult to localize accurately the particular parts involved when the Klumpke paralysis was manifested.

The Impurity of American Bromide of Potassium.—An important point to which the reviewer has previously called attention elsewhere is the difficulty of procuring a bromide of potassium free from chlorate of potassium. Helbing and Passmore (*Pharm. Rundschau*, July, 1892) have recently examined four specimens of the product purchased in the American market and found in them between 4·52 per cent. and 5·92 per cent. of chlorate of potash, which is much more than that allowed by the United States Pharmacopœia (3 per cent.) and the German Pharmacopœia (1 per cent.).

A Contribution to Diagnosis of Lesions of the Lower Spinal Cord.—In a valuable paper Dr. Starr (*Am. Jour. of the Med. Sci.*, July, 1892) presents some very useful facts, which may be briefly stated as follows:

The centers of control of the bladder and rectum are in the two or three last sacral segments of the cord.

The positions of lesions may be to a great extent determined by the areas of anæsthesia to which they give rise.

Thus a lesion involving the conus medullaris and the fifth and fourth sacral segments produces a heart-shaped area of anæsthesia between the two buttocks, including the perinæum, scrotum, posterior surface of penis (or entire genitals in the female), and rectal mucosa.

A lesion involving the fifth, fourth, and third sacral segments adds to the above area of anæsthesia by spreading over the buttocks farther and downward along the back of the thighs. It coincides with the points of contact when sitting on a saddle, and is hence termed the "saddle-shaped area."

When the lesion is still higher—at the level of the first and second sacral segments—there is still further increase of the anæsthetic area, which reaches below to the popliteal space and is more widespread over the back of the thighs.

A lesion at the level of the fifth lumbar segment produces anæsthesia including all of the above areas and adding other regions thereto, extending the thigh area down through the popliteal space and down the outer surface of the leg as far as the ankle or toes.

A lesion still higher—at the third lumbar segment—anæsthetizes the entire back of thighs and legs, and the front of the thighs also, except over a narrow funnel-shaped zone reaching down the whole front of the thigh and leg, even to the foot.

Destruction of all but the first segment of the lumbar cord causes complete anæsthesia of both legs and of the genitals and genital region. The line of anæsthesia follows Poupart's ligament in front (abdominal wall only becoming anæsthetic when first lumbar segment is included in the lesion), but behind has a horizontal outline at the level of the sacral crests.

In all these lesions and areas of anæsthesia the anus, perinæum, and genitals are included in the insensitive region. This is important as distinguishing organic from hysterical paraplegia, for in the latter the genitals are not included.

Above the level of the first lumbar segment, lesions of the cord produce anæsthesia extending around the trunk in a girdle form.

But a study of the anæsthetic areas alone will not help to distinguish lesion of the cauda high up from destructive lesion of the cord at its lowest extremity. In cauda lesions, however, pressure on the nerve-roots is often sufficient to cause widespread paralysis when sensation is but little affected, whereas in cord lesions at lower levels paralysis is very slight, being confined to the peronei muscles when the lesion is at or below the second sacral segment, only invading the muscles of the hip joint when the entire lumbar region of the cord is affected.

The Size of Several Cranial Nerves in Man as indicated by the Areas of their Cross-sections.—Donaldson and Bolton (*Am. Jour. of Psychol.*, December, 1891) examined seven male and three female brains in order to establish a criterion as to size of some of the cranial nerves, which might thus be compared with similar nerves in the blind deaf-mute Laura Bridgman.

Only the first, second, third, and fourth nerves were studied. As a result, the authors consider that there is some asymmetry of nerves in the same brain and a very great difference in the size of the cranial nerves of different individuals. Comparing these measurements of normal encephala with those of the brain of Laura Bridgman, they found in the latter the olfactory bulbs and tracts small; the optic nerves, especially the left, very small; and the third nerves normal in size.

New Features in the Symptomatology and Treatment of Basedow's Disease.—In a careful analysis of thirty cases of exophthalmic goître (*Post-graduate*, July, 1892), Dr. Louise Fiske Bryson makes a distinct addition to the literature of this disease. The peculiar respiratory condition which the author first recorded in 1889 in this Journal has been looked for in most of these cases. Briefly stated, Bryson's symptom is a diminution in respiratory expansion. Breathing is increased in rapidity and altered in character. In the cases examined for this symptom, the author found the expansion on forced inspiration but a quarter of an inch in one case, half inch in six cases, an inch in four cases, an inch and a quarter in one case, an inch and five eighths in one case, two inches in six cases, and three inches in one case. In other words, expansion was lessened in thirteen out of twenty cases. Furthermore, respiration was increased in rapidity (twenty to thirty a minute) in fifteen cases.

As regards treatment, the usual remedies were employed where indicated, but a novel feature in the therapeutics of this disorder was the use in the cases with lessened chest capacity of systematized mechanical movements by means of Dr. Taylor's "Respirator." This is a machine so arranged as to produce by means of various mechanical devices a passive artificial respiration. Steam is the motor power. It exercises without fatigue or effort on the part of the patient. Aside from the direct influence of passive exercise with this apparatus upon the chest expansion, which it increases greatly, the author notes general improvement of the whole constitution, in muscular strength, in the entire circulation, in tissue metabolism, and in mental and nervous power. The drugs that seemed to act most favorably were nux vomica, arsenic, and digitalis. The author considers that under favorable conditions the disease tends to recovery in from one to five years.

Chorea Laryngis.—In the *Lancet* for March 12, 1892, Nicoll describes three cases of chorea involving the laryngeal and pharyngeal muscles and producing a cough. This cough is presumed by the author to be reflex, and due to the abnormal sensations in the larynx caused by the inco-ordinated movements of the laryngeal muscles. Cocaine employed in one of the cases led to cessation of the cough. In these cases the laryngoscope should be used to determine the nature of the disorder. In the case just mentioned the author observed, besides the choreic movements, a congestive spot on one cord. In later stages there may be hoarseness in conjunction with the cough.

The Cerebral Palsies of Childhood.—Dr. B. Sachs (*Samml. klin. Vortr.*, 46, 47) has published a monograph on the subject of the cerebral palsies of children. His studies are based upon 225 cases, part of which were studied in conjunction with Dr. Peterson. The author gives a full historical summary, and enters into a thorough discussion of the clinical and pathological features of these frequent though little-studied diseases of early childhood. He divides all these cerebral palsies into three main groups.

Group I.—Cases of intra-uterine origin.

Group II.—Cases due to traumatism during labor.

Group III.—The acute or acquired palsies. Histories illustrating the particular features of each group are given in sufficient detail.

The palsies due to prenatal causes are dependent either upon large cerebral defects which so frequently involve the motor areas, or upon a condition of agenesis corticalis in which the arrest of development affects the highest nerve elements only.

Palsies brought on by traumatism during labor are generally due to a widespread meningeal hæmorrhage over one or both hemispheres or only over parts of each. In these, as in the other groups of cases, the distribution of the palsy is simply the result of the extent of the morbid process in or over the cortex.

The greatest interest attaches to the pathology of the acquired infantile cerebral palsies. Strümpell's theory of polio-encephalitis is shown to be without much foundation. The evidence from the author's own studies and from a careful review of the literature of the subject proves that these infantile apoplexies are most frequently due to the same causes which are operative in adult cerebral palsies—viz., hæmorrhage, thrombosis, and embolism. The secondary conditions following upon these initial lesions are a general sclerosis, the formation of cysts, and porencephalic defects of varying extent. In a few cases the cerebral palsies are the residue of an early chronic meningitis.

In the section on differential diagnosis special attention is called to the fact that cases which pass as cases of athetosis, or of chorea, or of epilepsy are often, on closer examination, found to be cases of cerebral palsies, with which the above-named conditions happen to be associated. The author thinks it particularly important that cases of epilepsy should be examined with reference to such possible association, for it takes such cases of epilepsy out of the category of so-called idiopathic epilepsies, and proves them to be due to organic lesions of the brain—a distinction of some importance with reference to operative procedure.

In the discussion of the treatment of these palsies, the writer maintains that much can be done by orthopædic treatment in the way of correction of the many deformities brought on by these diseases. He also insists that the acute stages should be treated on the same principles which guide us in the treatment of acute adult apoplexies.

The frequent association of epilepsy with these palsies raises the question of surgical interference. The lesions in these palsies are often as strictly localizable and recognizable as in cases of traumatic epilepsy. It is therefore suggested that operative interference be attempted under the same restrictions as in the purely traumatic cases. Several cases of the author were operated upon, but the results have not been more gratifying than in the cases of epilepsy due to external injuries. Better results can be expected if the operation is performed earlier in the course of these diseases than has hitherto been the case. To accomplish this it will, above all, be necessary that the general practitioner and the neurologist recognize the earlier stages of this important class of cases.

The Seasonal Relations of Chorea and Rheumatism.—Dr. Morris J. Lewis, of Philadelphia, has made a study of the seasonal relations of chorea and rheumatism based upon thirteen hundred and eighty-three attacks of chorea and six hundred and seventy-three attacks of acute inflammatory rheumatism occurring during the fifteen years between 1876 and 1890. About half of the chorea cases occurred in Boston and half in Philadelphia. Comparison was made with the meteorological records of Boston and Philadelphia during the same period of time. The author concludes that chorea and rheumatism are evidently seasonal disorders.

The fewest attacks of chorea occur in October and November, and the greatest number in March and April.

The greatest number of rheumatic attacks occur in April and the fewest in the autumnal season.

There was considerable resemblance between the tracings of these diseases and the tracings of storm centers passing within four hundred miles of Philadelphia and Boston, and also a marked resemblance to tracings showing the mean actual barometer and mean relative humidity.

There was also close resemblance of the tracings to the record of monthly variation in the amount of general sickness in the community.

He considers overstudy a predisposing but not an exciting cause of chorea; that overstudy conjoined with meteorological conditions was probably the chief ætiological factor.

Dr. Lewis's paper was read before the Association of American Physicians at its recent meeting.

Some Varieties of Birth Palsies.—In the *Boston Med. and Surg. Journal* for July 7th Dr. R. W. Lovett has an interesting paper on the surgical aspect of the paralysis of new-born children, in which some facts are given that are valuable in conjunction with the paper of Dr. Sachs reviewed above. The latter deals with spastic cerebral palsies only, while Dr. Lovett's refers especially to spinal and peripheral lesions.

Excessive traction upon the legs or head gives rise to a paraplegia due to an injury of the spinal cord. Three authentic instances are cited. In one, the case of Nadaud (*Thèse de Paris*, 1872, No. 282), there was head presentation, difficult labor, and forceps extraction, the traction with the latter being unusually prolonged. In a case of Parrot's (*L'Union médicale*, 1870, No. 11) there was breech presentation, very strong traction upon the legs, complete paraplegia at birth, and a rupture of the spinal cord at the seventh cervical vertebra, determined by autopsy several days later. The third case, reported by Gueniot in the same journal as Parrot's, was a ruptured cord at the third cervical vertebra and fracture of the spine produced by severe traction.

The author then speaks of the facial paralysis occurring at birth due to the pressure of forceps upon the facial nerve most often at its exit from the stylo-mastoid foramen. Although this paralysis usually disappears in a few days or weeks, occasionally it may be permanent, as in a case described by Duchenne.

The special subject of the author's paper, however, is birth palsies of the arm, of which he has observed two cases himself and has obtained records of seven others from Boston practitioners. Of eight of these cases, one was a cross-birth, one a foot presentation, and six were head presentations.

Sometimes the disability in one arm may be due to a fracture or dislocation of the upper end of the humerus simulating a paralysis.

Usually the disability is a paralysis due to injury of the brachial plexus lying at the root of the neck among the muscles in front of the trapezius, and therefore liable to severe pressure in the descent of the child. Jacquemeyer attributes it more often to prolonged pressure of the humerus on the nerve-plexus of the axilla. Danyau (*Bull. de la soc. de chir.*, 1851, ii, p. 148) reports one case in which the forceps had, by pressure upon the nerves, injured them locally, for at the autopsy there was a long contusion running down the border of the trapezius externally, and the nerves below were found surrounded by ecchymoses.

The paralysis is most marked in the deltoid and biceps, the supinator longus, and the supraspinatus and infraspinatus.

Infantile Spasmodic Paraplegia (Little's Paralysis).—Under this rather obsolete heading Mr. W. K. Hunter writes an article in the *Glasgow Medical Journal* for July, reviewing the ancient literature of the subject of infantile cerebral palsies and discussing the pathology of these disorders from the standpoint chiefly of 1853. He even presents Little's classification of infantile spastic palsies. Attention is called to the paper because the author seems totally unacquainted with the large literature of the subject—German, French, English, and American—that has been given to the world during the past five years.

Exalgine in Chorea.—Dr. C. L. Dana, in an article in the *Journal of Nerv. and Ment. Disease* for July, 1892, gives a favorable account of his use of exalgine in sixteen cases of chorea. He believes that it has an unquestionably specific action in ordinary Sydenham's chorea. It is not indicated in chronic chorea, habit chorea, chorea major, or convulsive tic. He gives the drug in two-grain capsules three times the first day, four times the second day, five times the third day, and finally three grains five times daily if required. At the same time he administers the citrate of iron and quinine. Exalgine is a drug that should be given carefully, for it may cause muscular prostration, acute anæmia, and cyanosis.

In one case treated, the total duration of the disease was seventeen days, and the duration after beginning the exalgine treatment less than ten days. In one other there was almost equal rapidity of cure, in two the disorder lasted two weeks, and in one four weeks. The average duration under the treatment was five weeks. A good many cases had been under arsenical treatment without apparent result previously to undergoing the course of exalgine and iron.

New Inventions, etc.

A GASTRIC ELECTRODE.

By Charles G. Stockton, M. D.,

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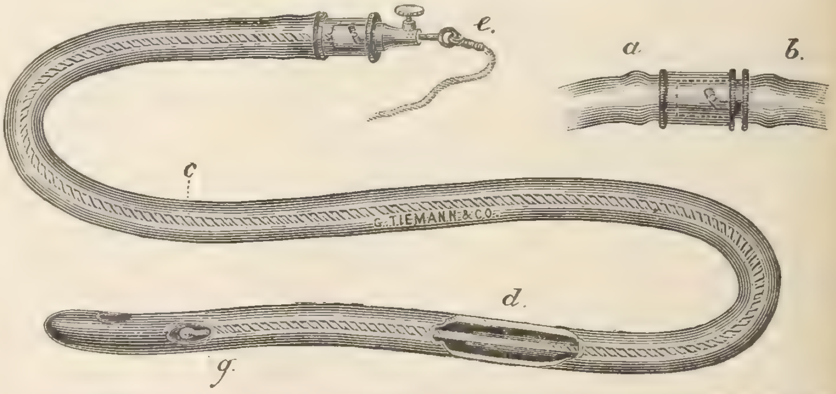
In November, 1889, I published in the *Medical Record* a description of a gastric electrode with which I had been working for two years. Since that time I have made some modifications in the instrument, and, after a large experience with it, feel that it is proper once more to present the matter to the profession, particularly as I am frequently called upon to describe the contrivance by letter.

As now employed, the instrument consists of a No. 13 soft- rubber stomach tube, twenty-eight inches long, which is coupled my means of a ground steel joint to three feet of rubber tubing, terminating in the ordinary funnel. Through this the stomach is emptied in the ordinary way. When it is clean, a small amount of a saline solution is introduced into the stomach; the proximal part of the tube is disconnected at the coupling without removing the tube from the stomach. There is now introduced through the stomach tube *in situ* a spiral electrode which, when in place, completely closes the proximal opening of the tube by a ground steel plug which is held in place by a bayonet fastening. The distal extremity of the spiral wire terminates at the upper of the two fenestræ at the lower end of the tube. This arrangement prevents the touching of the mucous membrane of the stomach by the metal point. The conducting cord from the battery is attached to the upper part of the electrode and retained by a thumb screw.



a, the stomach tube; *b*, rubber tubing connected by clamp arrangement; *c*, the stomach tube; *d*, an opening in the stomach tube showing the spiral wire; *g*, a fenestra in the stomach tube showing the end of the spiral wire; *e*, showing the conducting cord fastened in place by a thumb screw, and the electrode held fast in the tube by a bayonet fastening.

After the treatment the spiral wire is removed, the rubber tubing again coupled on, and the stomach emptied of its saline solution, and the entire treatment, including lavage and electricity, is completed with but a single introduction of the stomach tube.

As now made by George Tiemann & Co., of New York, this instrument gives perfect satisfaction, and is worthy of the attention of those who study gastric disorders.

Miscellany.

Febricula with Abdominal Tenderness.—Mr. Ronald Ross, D. P. H., M. R. C. S., I. M. S., of Bangalore, contributes an interesting communication on the subject to the June number of the *Indian Medical Gazette.* A large number of cases of febricula among natives in his part of India, he says, are accompanied by more or less abdominal tenderness *in spots.* The fever, which often runs rather high and which may or may not be preceded by a rigor, generally lasts for some days, but gives way at once to an efficient purgative, with or without a dose of quinine. The cases are epidemic, endemic, or sporadic. The tongue is red, rather dry, with a high standing white or yellow fur, and sometimes with " strawberry " points. The abdomen is generally slightly full. On making a gentle but deep palpation with the fingers of *one* hand, localized spots of tenderness will be discovered, especially close to the left of the umbilicus and a little above it; also in both iliac regions. Portions of the intestines may be tympanitic; other portions, generally tender, may be felt to have contents, especially, of course, in the descending colon. There may be gurgling here and there, showing, he imagines, some liquid fæcal thrombosis. Hepatic tenderness is not at all uncommon, epigastric tenderness rarer, splenic rarer still. *Pain* of the abdomen is by no means always present. On careful inquiry, it may generally be ascertained that the abdominal symptoms have *preceded* the constitutional disturbance—the patient has had loss of appetite, noise in the abdomen, pain, and constipation or diarrhœa some days or hours before commencement of the fever. If there has been constipation, the tenderness is much more extended than if there has been diarrhœa, and the former symptom is much the more common. The *height* of the fever has no relation necessarily to the degree of tenderness, though the *duration* of the fever has, he thinks. The constitutional symptoms, in fact, are the more prominent: the patient complains of fever, not of stomach-ache. Indeed, he often denies having anything the matter with the abdomen, until careful palpation discovers sometimes a single spot of the tenderness, which may easily be overlooked. In such cases the fever is often very high, and we can not therefore diagnosticate mere enteritis.

This tenderness is *not* present in health, though common in the ward in connection with many sorts of sickness. It is not necessarily accompanied with fever. It often precedes or occurs with diarrhœa, dysentery, severe forms of fever, rheumatism, pneumonia, and other prolonged cases. In the author's experience it is almost always present in febricula, and in a very common form of fevers, being or simulating remittent, intermittent, and even enteric. So common is it that on March 25th, for a single example, out of thirteen fresh cases of fever which Mr. Ross saw, he found the tenderness in eleven, while one of the two remaining patients had diarrhœa and the other had constipation.

Three important points, says the author, are observable in connection with this tenderness. First, it varies directly with the fullness of the bowels. It is much increased by constipation, much decreased by diarrhœa and purging (if mild). In fact, gentle, thorough laxation generally removes it entirely. Secondly, if the purging has been too violent or inefficient, it remains more or less. Sometimes, though it has disappeared on the day after purgation, it returns on the third day owing to the coming down of fresh food residues. Thirdly, the fever in these cases of febricula bears a remarkable proportion, in duration, to the duration of the tenderness. The fever comes on a little while after the tenderness; it vanishes with the tenderness on purgation; it comes on again if the tenderness returns. It seems to follow step by step, so to speak, the course of the abdominal symptoms, and is much increased if the bowel contents are not speedily discharged. Another point is that the tenderness may shift sometimes, owing to movement of the small gut and other causes.

The author raises the following questions:

1. What is the abdominal tenderness due to? The only satisfactory reply, he answers, is that it is due to slight muco-enteritis or enlargement of the mesenteric glands in consequence of irritating septic food residues. The classic law that where there is tenderness there is generally some hyperæmia, or inflammation forbids us to consider it as merely symptomatic. It can not be due only to flatus or fæcal collections, as these so often occur without tenderness, as also considerable tenderness is continually present without either. It is not due to any severe or phlegmonous form of enteritis from absence of vomiting, mucous stools, etc. It is not due to simple fæcal obstruction, as much tympanitis and colicky pain are absent. It is not due to ulceration; as the symptoms are not sufficiently permanent. In fact, the slightness of the local symptoms and the *cure by purgation* force us to only one conclusion. I have fancied at times that I have been able to distinguish enlarged mesenteric glands in some thin persons. The tenderness is probably much increased when the inflamed bowel is full.

2. What is the relation of the fever to the tenderness? Most medical men, accustomed to assume a primary blood infection, malarial they say, for these cases will declare that the enteritis is due to a determination of the poison to the intestines. A miasma inhaled by the lungs infects the blood and then causes muco-enteritis as a secondary complication, just as it causes splenic or hepatic enlargement. The *cure by purgation* is due simply to the good effects that purgatives generally have on fevers.

But may we not with equal reason reverse this process? May we not consider that the enteritis follows on a septic condition of the food residues just as inflammation of a wound or of the uterus follows a septic state of the discharges? And may we not consider the fever as due to an absorption of toxic, septic, or inflammatory products through the inflamed mucous membrane of the gut, just as we know that inflammatory and post-partum fevers are due to a similar absorption in wounds and the uterus? Which, then, is primary, the fever or the enteritis?

Mr. Ross is inclined to think that the primary blood infection theory is negatived by these considerations:

(*a*) That abdominal tenderness, pain, constipation, and diarrhœa in almost all of these cases *precede* the fever.

(*b*) That gentle but efficient purgation reduces the fever at once; whereas, if the intestines are allowed to remain full, we may put in our quinine or phenacetin for days in vain, unless indeed we induce vomiting, or unless diarrhœa naturally supervenes.

(*c*) That if abdominal tenderness recurs on the third day owing to the passage of food residues derived from meals taken since the primary purgation, the fever recurs also and vanishes again on a second purgation. If the enteritis continues, as evidenced by continued tenderness, or if it becomes aggravated, as evidenced by mucous stools, etc., the fever also continues or is aggravated.

(*d*) If the enteritis is only a secondary affection, it is very strange that the fever so exactly coincides with it.

The author is inclined to hold that this form of febricula is simply a form of ptomainic poisoning derived from the contents of the bowel, and closely parallel to the ptomainic fevers derived from septic wounds, the post-partum uterus, croupous and diphtheritic surfaces, etc. The term *entero-septic febricula* seems applicable to these fevers.

3. What is likely to be the result in these cases if purgation of the bowel is not speedily effected? Speaking from his own practice, Mr. Ross is inclined to think that they may go on to more or less severe, fevers simulating remittent, intermittent, or even enteric fevers, if offending food residues are not quickly removed. A medical man, who depends on a single dose of a purgative, is often profoundly mistaken in thinking that he has cleared out his patient's bowels; and one who gives a violent cathartic often merely aggravates the enteritis. Without due care the residues of successive meals passing over the inflamed tracts of the intestine aggravate the disease and cause regular exacerbations of fever, till we get cases we are apt to confound with remittents and even intermittents.

4. We may ask, "How many cases of Indian fevers and other diseases now recorded as due to malaria, chill, abortive enteric, etc., may not in reality arise from a septic state of the intestines? What reasons have we for supposing that ptomainic poisoning from septic food residues or from inflamed tracts of intestines is at all possible? May not the conjecture lead us toward some possibly important discriminations on the subject of Indian fevers and the allied diseases, diarrhœa, dysentery, and hepatitis? Finally, may not such discriminations be of material service to us in *treatment?*

Notes of the histories of five cases are appended to Mr. Ross's article.

Mortality in Cities in the United States.—The following table represents the mortality in the cities named, as reported to Dr. Walter Wyman, Surgeon-General of the Marine-Hospital Service, and published in the Abstract of Sanitary Reports for July 22d:

CITIES.	Week ending—	Population, U. S. Census of 1890.	Total deaths from all causes.	DEATHS FROM— Phthisis pulmonalis.	Yellow fever.	Small-pox.	Varioloid.	Varicella.	Typhus fever.	Enteric fever.	Scarlet fever.	Diphtheria.	Measles.	Whooping-cough.
New York, N. Y.	July 16.	1,515,301	1,336	104						8	8	21	23	16
Chicago, Ill.	July 9.	1,099,850	418			1				13	1	9	3	4
Philadelphia, Pa.	July 9.	1,046,964	470	47						5	7	15		6
St. Louis, Mo.	July 9.	451,770	185							3	3	3		
Boston, Mass.	July 16.	448,477	224	35						2	1	4		1
Baltimore, Md.	July 16.	434,439	286	20						5	1	1		2
Cincinnati, Ohio.	July 14.	296,908	110	9								2		
New Orleans, La.	June 25.	242,039	143	16						3		3		
New Orleans, La.	July 2.	242,039	143	16						1				
Pittsburgh, Pa.	July 14.	238,617	117							6	1	2	2	
Washington, D. C.	July 9.	230,392	153	10						2		1		2
Detroit, Mich.	July 16.	205,876	109							5	6	8		
Rochester, N. Y.	July 16.	133,896	52	6								4		
Kansas City, Mo.	June 11.	132,716	31	3								1		
Kansas City, Mo.	June 18.	132,716	29	3						1				
Kansas City, Mo.	June 25.	132,716	23	3							1			
Kansas City, Mo.	July 2.	132,716	28	3							1			1
Providence, R. I.	July 16.	132,146	60							1	1	1		
Toledo, Ohio.	July 14.	81,434	24											
Richmond, Va.	July 9.	81,288	55	8										2
Nashville, Tenn.	July 16.	76,168	35	6						1				
Fall River, Mass.	July 1.	74,398	44	5								1		1
Fall River, Mass.	July 9.	74,398	52	1							1			1
Fall River, Mass.	July 15.	74,398	50	1								1		1
Erie, Pa.	July 16.	40,634	12									1		
Portland, Me.	July 16.	36,425	13											
Binghamton, N. Y.	July 16.	35,005	14	1						1				
Galveston, Texas.	July 8.	29,084	8											
San Diego, Cal.	July 9.	16,159	3											
Shreveport, La.	July 9.	11,979	4											
Pensacola, Fla.	July 9.	11,750	2							1				

The New York State Law as to Physicians' Testimony.—Under the heading of The Privilege of Medical Witnesses, the New York *Sun* says:

Section 834 of the Code of Civil Procedure of this State is in these words:

"A person duly authorized to practice physic or surgery shall not be allowed to disclose any information which he acquired in attending a patient in a professional capacity and which was necessary to enable him to act in that capacity."

Confidential communications to clergymen and to attorneys and counselors at law are protected by similar provisions.

There are few subjects which our courts are more frequently called upon to consider than the claims of witnesses and litigants under these provisions relating to the privilege of professional men. So far as physicians are concerned, the tendency of the decisions has not been by any means uniform. The courts have seemed to incline at one time to great strictness in shutting out testimony, and at other times they have manifested a disposition to open the door wider and exclude nothing except what was confided by the patient to the physician alone, and would only be made known to the world if the physician were allowed to tell what he had learned from the patient.

The present trend of the decisions is toward a less stringent application of the statute than has sometimes been insisted upon. In a life insurance case just decided by the Court of Appeals, Chief Judge Earl, speaking for all the judges, declares that there is nothing in our statute to prevent a doctor from testifying that a particular person was sick and was attended by the witness as a physician. The Court also held that a physician might testify as to the date when he was called upon to attend such a patient professionally, and how many times he attended, and whether his visits were daily or hourly.

A case might easily be imagined in which no evidence of illness at all could be adduced except by such testimony as this from a physician; and under these circumstances the knowledge of the doctor as to the fact of illness and its duration, as indicated by the number of visits, would seem to come within the literal prohibition of the statute. According to the Court of Appeals, however, while a doctor can not be obliged to testify as to the nature of a person's illness, he may be compelled to disclose the fact that the person was ill and consulted him or called him as a physician; and he must also tell how long he continued to see the patient professionally.

A Large Number of Gall-stones.—Dr. H. E. Noble, of Stony Ridge, Ohio, informs us that in a post-mortem examination, made on July 2d, on the body of a woman who had died suddenly by the bursting of an aneurysm of the aortic artery, he, with the assistance of Dr. A. G. Snyder, of Stony Ridge, removed two hundred and thirty-five gall-stones from the gall-bladder, ranging in size from an eighth to a third of an inch in diameter.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

Original Communications.

THE SPECIFIC TREATMENT OF ENTERIC FEVER.*

By GUSTAVUS ELIOT, A. M., M. D,
NEW HAVEN, CONN.

FEW subjects within the domain of practical therapeutics are of greater importance than the treatment of enteric or, as it is more frequently called, typhoid fever. The not inconsiderable mortality which it annually causes among individuals who have reached or are approaching maturity, and the great loss of time and strength which it entails upon those of its victims who ultimately recover, give to the subject a peculiar interest.

Can the course of typhoid fever be shortened, or can its severity be alleviated, by any known therapeutic measures?

To this question most practitioners, teachers, and writers have until recently given a negative answer. All American writers—so far as I know—have done so until within ten years. The late Dr. Austin Flint, Sr., in 1880, and Dr. James C. Wilson, in 1881, did so in unequivocal terms.

The optimistic Bartholow, in 1877, in the second edition of his *Practical Treatise on Materia Medica and Therapeutics*, expressed no personal opinion in regard to the value of the specific treatment with calomel, with which, he says, "Liebermeister has obtained surprising results," and made no mention whatever of the use of iodine or carbolic acid as specifics in fever.

Wilson, in his *Treatise on the Continued Fevers*, published in 1881, wrote: "No medicine or method of treatment by which enteric fever can be arrested is at present known" (p. 227). He, however, mentions, without expressing his own opinion of its value, the German method of using calomel (p. 228), and also states that "in this country Professor Bartholow has used, apparently with decided success, a combination of tincture of iodine and carbolic acid."

Even so late as 1884, Dr. James H. Hutchinson, in the *American System of Medicine*, wrote: "It is certain that no remedy or plan of treatment has yet been discovered which has the power of cutting the disease short, although this power has been claimed at different times for several" (vol. i, pp. 325, 326).

Flint, in the fifth edition of his *Treatise on the Principles and Practice of Medicine* (1880), wrote: "It must be admitted that the known resources of therapeutics do not afford means for the arrest of these fevers [typhus and typhoid], nor even for shortening the duration of the febrile career" (p. 974). Almost, if not quite, alone among medical writers, and with his usual foresight, he, however, did not allow this statement to stand unqualified, but on the following page added: "It is not an unreasonable expectation that an antidote or a parasiticide, as effective in typhus and typhoid fever as quinine in malarial fever, may hereafter be discovered, and such a discovery is a proper aim for continued experimental observations." I know of no passage in medical literature more likely than this to stimulate the much-despised general practitioner to careful observation and study.

No one to-day professes to believe that an antidote has yet been discovered which is as effective in enteric fever as quinine in malarial fever. Many very estimable men—unfortunately, too, many teachers—seem to regard the attempt to discover such an antidote as either beyond their ability or beneath their dignity. Happily, however, there are a few teachers and practitioners who do not consider the search for a plan of treatment which will decidedly affect the course of the disease as entirely hopeless. By physicians of Philadelphia and the West and South the most careful observations have been made, and the most satisfactory results have been reported. On the other hand, the physicians of New York and New England have clung to the expectant plan of treatment, and have been reluctant to try and slow to acknowledge the value of any other treatment. Fortunately, there are some physicians who believe in a specific treatment of enteric fever, and who do not hesitate to publish their views in books and journals. It is especially to Bartholow, formerly of Cincinnati, but now of Philadelphia, and to Wilson, also of Philadelphia, that the profession is chiefly indebted for a knowledge of the value of certain therapeutic measures, which may fairly be regarded as constituting a specific plan of treatment.

Among the different remedies which have been recommended, those most commonly used are preparations and compounds of mercury, iodine, carbolic acid, salicylic acid, the mineral acids, turpentine, nitrate of silver, quinine, and alcohol.

The form of specific treatment of which it is my purpose to speak embraces the use of calomel, in connection with the tincture of iodine and carbolic acid. This method of treatment was described by Dr. James C. Wilson before the College of Physicians of Philadelphia, on January 3, 1883, as one which he had employed during the preceding year, and a brief account of it was published in the *Medical News* for January 20, 1883. Bartholow, as stated by Wilson, had previously used the following prescription:

℞ Tincturæ iodinii................ ʒ ij;
Acidi carbolici................. ʒ j.
M. Sig.: Two or three drops three times a day.

Wilson used the same combination, giving one, two, or three drops every two or three hours through the day and night. He also prescribed from seven and a half to ten grains of calomel, to be taken every second night until three or four doses had been taken.

It is my practice, in commencing the treatment of a case of enteric fever, to direct that the patient take ten grains of calomel every other day until four doses have been taken. I also order a mixture which contains one drachm of carbolic acid and a sufficient quantity of tincture of iodine to make four drachms, and direct that four drops of this, in a wineglassful of cold water, be given to the patient every four hours. For children smaller doses are of course prescribed.

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* Read before the Connecticut Medical Society at its one hundredth annual meeting.

To one who has been taught that cathartics should always be avoided in the treatment of typhoid fever—and who has not?—the proposal to give a patient suffering with this disease ten grains of calomel, and to repeat this dose at intervals of forty-eight hours for a week, may seem reckless—perhaps even murderous. But this medication does not produce the disastrous results which might be expected by one who believes that he must never give a cathartic in typhoid fever. I must admit that when I began to use calomel in this way I prescribed smaller doses, and subsequently inquired in regard to their effect with some trepidation. But observing that unpleasant effects seldom, and dangerous effects never, followed their use, and that, furthermore, these smaller doses sometimes failed to produce catharsis, I increased the dose to ten grains. It will generally be found that unpleasant effects are no more likely to follow a dose of this size than a smaller one. It is, moreover, desirable to give a large enough dose to insure a movement of the bowels, on account of the danger of salivation when the drug is retained in the body longer than twenty-four hours. If the bowels do not move within twelve hours after the ingestion of the calomel, as sometimes happens even after a ten-grain dose, it is wise to order drachm doses of sulphate of magnesia, to be dissolved in a little water, and repeated every fourth hour until a movement occurs. It occasionally happens, particularly if the bowels do not move freely, that symptoms of salivation, such as increased secretion of saliva, soreness and sponginess of the gums, and unnatural sensitiveness of the teeth, appear. This complication should be treated by washing the mouth every hour or two with a solution of chlorate of potash, of the strength of half an ounce to a pint of water. It will seldom be found necessary to discontinue the use of calomel before the fourth dose has been taken.

An experience of eight years in the use of this treatment, in such cases of enteric fever as have fallen under my observation in a moderately extensive general practice, has convinced me that its value is greatly underestimated by most physicians. I am confident that by this treatment the duration of enteric fever may be shortened, that in some cases the course of the disease may be arrested, that its severity may be mitigated, and that, in most cases, dangerous complications may be avoided. But, in order to obtain any benefit at all from this treatment, still more to obtain the most favorable results from it, it is necessary that it should be employed judiciously. There are certain limitations to its utility which must be borne in mind. If these are disregarded, disappointment will follow its use. No formal statement of these limitations has yet been made, nor has any one formulated the rules which must be observed by him who wishes to use this method successfully. I shall endeavor now to point out these limitations—to enumerate some of the reasons which experience has shown are likely to lead physicians who try it to form an unfavorable opinion of it.

The first requisite to the successful use of the specific treatment is to commence it early. Physicians who are not accustomed to it usually commence too late. There are several reasons why they do this.

Some physicians never try a new method of treatment in any particular case until after all the methods to which they are accustomed have failed. After a patient has been suffering with enteric fever two or three weeks, has, perhaps, had a severe diarrhœa, possibly several hæmorrhages, and probably considerable delirium; when, in spite of the usual expectant treatment, he has grown worse and worse, his temperature has gone higher and higher, and his pulse has become more rapid and more feeble—when, in short, the patient is at death's door, the average practitioner will begin to think of something else which he can "try." If he happens to recollect anything about the specific treatment, or if he happens to pull down a book from the shelf and find some favorable mention of it, he is very likely to soliloquize: "Well, I guess that I will try that, but I do not suppose that it will do any good." Nor will he be disappointed. Iodine and carbolic acid are not drawn from the fountain of life. They will never reanimate dead men. They will prove of little or no benefit to such patients as I have described. The man who, under such circumstances, tries the specific treatment will very likely at once and forever condemn it. But he has not given it a fair trial, and his opinion concerning it is absolutely valueless. He and men like him try the treatment and fail to obtain any benefit from it because they are unwilling or neglect to try it until other methods of treatment with which they are more familiar have proved unsuccessful.

Another reason why some men commence the treatment too late is because they do not find out what is the matter with the patient quickly enough. A very common mistake which many popular practitioners make in connection with typhoid fever is to assume that the victim of this disease, when he consults them, is suffering from biliousness, or bilious fever, or "malaria," when in reality the disease is typhoid fever. If the physician ever discovers his mistake, he is generally adroit enough to conceal his ignorance by declaring that the disease has "run into" typhoid fever, or has "developed into" typho-malarial fever. Sometimes, no doubt—so dense is professional ignorance in some cases—he really believes that this has happened. Men readily excuse themselves for making this mistake because they have been taught that it is difficult to make the diagnosis of the disease during the early days of its course. This kind of teaching is a great mistake. It has been a great hindrance to the accumulation of exact knowledge of the disease. It has destroyed many valuable lives because it has led physicians to excuse themselves for neglecting to make an early diagnosis, and consequently they have not been in a position to adopt suitable therapeutic procedures. Within a few years, neglect of this kind, by a physician whom he had consulted, was followed by the death of a son of one of the most distinguished medical teachers of New York.

The patient should be carefully examined at the first consultation and a diagnosis made. With a reasonable amount of care, it is just as easy to make the diagnosis of typhoid fever the first time the patient is seen as it is to make the diagnosis of pneumonia at the first visit. One must not hesitate to make the diagnosis of typhoid fever because the teachers and text-books declare that it is a difficult thing to do during the first week of the disease. It is not necessary to wait three or four days so as to observe the course of the temperature. This will seldom throw much light upon the nature of the disease. One might almost as well wait for the hair to fall out before making a diagnosis.

Nor must one hesitate to decide that the patient has typhoid fever because he does not seem to be very sick. Such hesitation may cost the patient his life. It may lead you to think that he has some malarial disorder, and to permit him to keep around on his feet, while you rely on quinine to cure him. In the mean time, if he really has typhoid fever, the disease has been steadily advancing in severity, so that the chances of his recovery are greatly diminished; and even if he finally does recover, he will be obliged to remain in bed from two to eight weeks longer than would have been necessary if the real nature of the disease had been recognized at first, and appropriate treatment had been immediately instituted. On the other hand, it may easily advance to such a grade of severity, from imprudence consequent upon a failure to recognize its real nature, as to terminate in death. Of course one may not be correct every time, but it is far better to occasionally keep a man who has no serious disease in bed for a day or two than to allow one who has typhoid fever to walk about for three or four days. When a man comes into a physician's office and remarks in a languid sort of way: "I have been having a little malaria for a week or ten days, and thought that I would come in and get something to brace me up, because I have a good deal of hard work which I must do this month," even if his symptoms do point pretty strongly to the existence of typhoid fever, it is difficult to overcome the reluctance which one feels under such circumstances in coming to the conclusion that the patient really has that disease, and that he must at once go to bed and must remain there for from two to eight weeks. But if one wishes to treat typhoid fever with the best results he must make a correct diagnosis the first time the patient is seen. If he has that disease, put him at once in bed, give him only milk for nourishment, and then, if you like, try the specific treatment.

But you very naturally suggest, Suppose that later developments prove that the patient has *not* typhoid fever. Very well; a mistake has been made, but no harm has been done. I presume that no one would make the diagnosis of typhoid fever until he had counted the pulse and taken the temperature, and found the one accelerated and the other elevated. There is no morbid condition, accompanied by acceleration of the pulse and elevation of the temperature, which is not benefited by rest in bed and a milk diet. If, then, in a day or two, the temperature falls to normal, the pulse returns to its usual rate, and it becomes apparent that the first diagnosis was wrong, no harm has been done, but, on the other hand, the restoration of health has been hastened. If, however, the opposite mistake has been made, if the patient has really had enteric fever, but the nature of the disease has not been recognized, and appropriate therapeutic measures have not been adopted, the severity and duration of the disease have almost certainly been increased, possibly the life of the patient has been sacrificed. These occurrences are far more frequent than the supervention of typhoid fever upon malarial fever; more frequent, too, than the alleged pathological superfœtation, typho-malarial fever. If you are not certain of your diagnosis, give the patient the benefit of the doubt, and assume that he has typhoid fever until succeeding events prove that you are wrong.

Let me repeat again what I have already reiterated: the first requisite in the successful treatment of enteric fever is a prompt diagnosis.

A third reason why, in some cases, the specific treatment is commenced too late is because the patient does not come under the physician's care at a sufficiently early stage of the disease. He may have neglected to consult any physician, or he may have been under the care of an incompetent physician before he consulted one who employs this treatment; or, after he has been under the care of the physician of his choice for a number of days, he may find it necessary to enter a hospital, and consequently to suffer a change of medical attendants. Under any of these conditions it is impossible to obtain the most satisfactory results from the specific treatment.

The fact that patients with enteric fever do not usually enter a hospital until the disease has become well established or has reached an advanced stage prevents the best results of his treatment being observed in these institutions. Consequently, hospital physicians and consultants, who are usually connected with hospitals, are not likely to form an especially favorable opinion of this treatment. General practitioners rely for the most part for teachings in therapeutics and for new suggestions in regard to treatment upon the publications of distinguished teachers. These teachers, as a rule, reflect in their writings their experience in hospitals. From what has been already said it is evident that patients who enter hospitals are not likely to be very much benefited by the specific treatment, because the disease has usually made considerable progress, and valuable time has been wasted in trying other treatment. It is not strange, therefore, that the specific treatment is condemned by many hospital physicians, who are naturally reluctant to try upon their private patients a method of treatment which does not give strikingly good results in hospital practice. These facts explain why the specific treatment has not been more generally adopted by the profession at large—by general practitioners.

Three circumstances have now been mentioned under which the specific treatment may be commenced too late to give a good result, and consequently may fail to win the approval of the physician who tries it.

Assuming now that the patient has been seen early and that a prompt diagnosis has been made, a second reason why the specific treatment may not make a favorable impression upon the mind of the practitioner is that it may be discontinued too soon. Even if no very marked improvement is observed after forty-eight or seventy-two hours, the treatment should not be discontinued unless there is some especial important reason for doing so. One need not be surprised that at the end of this time the patient is not much better. The treatment should be continued for at least a week before the idea of abandoning it should be entertained. If in the mean time the patient has not grown worse, there is good reason for thinking well of the treatment. If, on the other hand, convalescence quickly ensues, it may fairly be regarded as specific.

A third reason why the specific treatment may fail to produce a favorable effect is that the medicine may not be retained by the stomach. Persistent vomiting is occasionally a marked symptom at the beginning of typhoid fever. Sometimes the calomel, at other times the mixture of iodine and carbolic acid, and occasionally both, are vomited. Rarely the stomach acquires an intolerance for either or both medicines after they have been taken without any trouble for several days. Under these circumstances it may be necessary to relinquish their use entirely. Such cases are, however, exceptional.

In following out this treatment, the most satisfactory results will be secured only by insisting upon those rules with regard to diet and rest which are now generally recognized. The patient must be kept in bed, in the horizontal position, from the time treatment is commenced until for a week the temperature has not been above 99° F. at any time during the twenty-four hours. He must not be allowed to travel, to get out of bed, or to have company. For the same period his diet must be exclusively of liquids, preferably of milk. Indiscretions as regards getting up too soon, eating solid food too early, or being excited by conversation are just as likely to be followed by a return of the fever as when convalescence has occurred under expectant treatment. I have sometimes suspected that there was more liability to a return of the fever after the specific treatment. This, however, would be difficult to prove and impossible to explain.

It is not my purpose to weary you with statistics or with the details of the histories of cases. There is such a great difference in the natural history of different cases of typhoid fever, so many cases have a favorable course independently of treatment, that statistics or histories designed to illustrate the favorable influence of any particular form of treatment are always met by the criticism: "Oh, the doctor had the good fortune to meet with a number of mild cases of the disease, and so has been deluded into thinking that the disease has been influenced by his treatment." I do not expect to convince any one that this treatment is infallible. I only hope to lead some one to think that it is worth trying.

My own experience may be briefly summed up as follows: In the summer of 1884 I commenced to use the specific treatment in cases of enteric fever. Every year since I have had a number of cases. All have been in private practice. Very few of them have been treated as systematically as I recommend you to do. It has not always been possible. The more closely the rules which have been laid down in this paper have been followed, the better the patients have done. I have never had occasion to regret that I did not stop giving the medicine earlier. I have sometimes been sorry that I did not continue it longer. Upon the stomach and tongue it nearly always exercises a favorable influence. By diminishing the duration and intensity of the fever, it enables the use of alcoholic stimulants to be entirely done away with in most cases.

Under no other treatment which I have employed have the patients done so well. I have used quinine and hydrochloric acid so thoroughly that I am convinced that neither has any influence upon the disease. Salol, which seemed to promise so much, has disappointed me. Turpentine and alcohol are of unquestionable utility in certain stages of severe cases, but are of little or no benefit in mild cases.

Having carefully studied the histories of a considerable number of cases, I am convinced that, used with certain reasonable restrictions, the specific treatment, as here described, has a positive beneficial influence over the disease, and is worthy of more favorable consideration than it has hitherto received.

In closing, I wish to repeat and to emphasize certain points which are of especial importance in connection with this subject:

1. Progress in the treatment of enteric fever has been hindered by certain prevalent but erroneous teachings of the schools and text-books. The most important of these mistaken notions is that the early diagnosis of the disease is difficult; a second is that the course of the temperature furnishes, in the majority of cases, any considerable aid in diagnosis; and a third, that all cathartics are dangerous and should be entirely avoided.

2. Clinical experience has already demonstrated that the course of enteric fever may be abbreviated, the intensity of the fever lessened, and the severity of the general symptoms very much ameliorated by the systematic use of calomel in connection with the tincture of iodine and carbolic acid.

3. In order to secure the most striking results from this plan of treatment, it must be commenced at the beginning of the disease, and followed up continuously as long as pyrexia continues. In the mean time the usual dietetic and hygienic rules must be strictly observed. Persistent vomiting may render it impracticable to continue the treatment after it has been commenced. If it is tried after other medication has proved useless, it is not likely to give much satisfaction.

If, now, any one who has listened to me is skeptical in regard to the claims which I have advanced, let me address a few words to him in particular.

If you have never used this plan of treatment, give it an early trial. Do not judge it by a single case, but try it in ten cases. Do not trust to your memory, but keep a written record of them, so that you may have facts and not merely impressions to guide you in forming your opinion. I believe that your conclusion will be favorable.

If you have tried it in two or three cases and then discarded it in disgust, is it not because you have neglected some of the rules which must be observed, if successful results are desired? If this is the case, give it a further and more careful trial.

Do not henceforth sit helplessly by the side of your patients with enteric fever, while the symptoms grow steadily worse and worse; while the temperature goes up, and down, and then still higher up, and the fever is destroying the structure of the most important tissues; while the intellect becomes more and more disordered; and while intestinal ulceration extends deeper and deeper—do not, I say, continue to sit with folded hands, expecting—expecting alas! too often in vain—that Providence and self-limitation will pull the patient through. Do not rise up and mildly but incredulously order a sponge bath when the patient feels hot, or a small dose of quinine three times a day, or a large dose if the temperature rises above 103° F., with the expectation that these measures will appreciably influence the course of the disease. They will not do it.

You may, if you like, prescribe the mineral acids. They will do no harm. But be very cautious how you run the risk of weakening the heart and causing disorganization of the blood by the use of the newer antipyretics. Be cautious, too, how you distress your patient by plunging him into a tub of cold water several times a day. You will rarely need to do it if you will employ the specific treatment.

Hold fast to your faith in the efficacy of drugs. Select them wisely. Administer them boldly. Study their effects carefully and patiently. Record your observations accurately. In this way you will be enabled to form an intelligent opinion, and will be in a position to offer to others evidence of value upon this very important subject.

CONTRIBUTIONS FROM THE SURGICAL SERVICE OF ST. MARY'S HOSPITAL FOR CHILDREN.

By CHARLES T. POORE, A. M., M. D.,
SURGEON TO THE HOSPITAL.

IV.

OPERATIONS FOR THE RADICAL CURE OF HERNIA.

The following are the cases of operation for radical cure of hernia. They are put on record as belonging to the series of papers being published, and in order that the patient may be traced and any change noted:

Case I.—Charles L., four years of age. Admitted February 28, 1885, with a large infantile hernia on right side. Patient has been operated upon before, but by what operation is not known. The ring is very large.

March 21st.—Ether. Incision made down upon the sac; it was found very adherent, and the parts about the ring blended together. Sac ligated, removed, and ring united with silk.

May 1st.—Wound united. No suppuration.

June 10th.—Discharged. No impulse. Parts well matted together.

1888.—Patient is dead, but up to the date of his death there had been no return of his hernia.

Case II.—James B., aged six years, has been in the hospital for some time with disease in the dorsal spine. Has had an infantile hernia on left side for some time, and is now giving him considerable trouble.

May 28, 1885.—Ether. Sac cut down on, and sutured to rings, but not removed. Wound closed.

June 8th.—Hernia came down again before he got out of bed.

November 28th.—Ether. Sac cut down upon, ligated, and removed. Pillars sutured. Drainage.

January 4, 1886.—Patient up and about. There has been a little suppuration.

February 18th.—Patient discharged cured to-day.

March 1, 1892.—Ring strong. No impulse.

Case III.—Patrick McN., aged five years. Admitted November 16, 1885, with phimosis and infantile hernia on the left side of large size. Circumcision performed.

January 19, 1886.—Ether. Sac ligated and removed. Pillars sutured. Drainage-tube. Some slight suppuration.

April 1st.—Patient discharged. Parts firm.

January, 1892.—Can not be traced.

Case IV.—Walter P., eleven years of age. Admitted December, 1886, with infantile hernia on right side. It came on suddenly some years ago and filled the scrotum. It has never been well held by a truss. On examination, a large infantile hernia is found on right side. Ring large.

January 24, 1887.—Macewen's operation performed. The sac filled with adherent omentum. Omentum ligated and cut off. Sac ligated and pillars of ring sutured. Drainage-tube.

March 29th.—There has been some slight suppuration. Ring tight. Patient discharged. Parts firm.

April 7, 1892.—Patient examined to-day. Ring perfectly closed. No impulse. Is at work and has to lift heavy articles.

Case V.—Joseph P., four years of age. Admitted March 3, 1888. Has had pneumonia. Yesterday had an attack of vomiting and a tumor was discovered in right groin and extending into scrotum. An attempt had been made to reduce it, but failed.

There is found a hard, oblong swelling occupying right inguinal region and descending into the scrotum. Patient looks sick, but the feel of the tumor is not that of a hernia.

Ether. Tumor cut down upon; it was found to be a hydrocele of the cord with very thick walls and containing a yellowish fluid. The tumor extended from the external ring down to the testicle. Above there was a sac containing about three inches of omentum adherent to its walls. The omentum was ligated and cut off and the thickened hydrocele removed, the walls of which resembled cartilage in hardness.

The pillars of the ring were brought together. The deeper portions of the wound were united with catgut, the skin with silver wire.

March 25th.—Dressings removed, parts well consolidated.

31st.—Patient discharged cured.

The tumor evidently had existed for a long time and was only discovered when vomiting came on.

March 12, 1892.—Examined to-day. No impulse. Canal obliterated.

Case VI.—Charles B., two years and a half old. Admitted September 10, 1889, with infantile hernia on right side; could not be held with a truss.

October 9th.—Ether, and McBurney's operation done.

November 15th.—Wounds all closed. Patient out of bed.

December 10th.—Discharged with a firm cicatrix.

March 20, 1892.—Patient heard from; is said to be well, and has no trouble from his hernia.

Case VII.—Charles S., six years of age. Admitted October 21, 1889, with an infantile hernia of right side since he was two years old. Gives him much trouble; can not be held with a truss.

November 7, 1889.—Ether. McBurney's operation performed.

December 13th.—Wound all closed. Patient out of bed.

23d.—Discharged. Cicatrix firm.

July, 1891.—Is reported well.

Case VIII.—Frederick McG., four years of age. Admitted November 20, 1889, with infantile hernia of left side, making its appearance during an attack of whooping-cough. Hernia is of large size and gives patient much trouble.

November 25th.—Ether. McBurney's operation performed.

January 6, 1890.—After the operation patient had an attack of acute bronchitis. Wound now all closed and child up.

February 10th.—Is to-day discharged, with firm cicatrix.

March, 1892.—Is reported well and has no trouble from his hernia. Was examined November 19, 1891. There was no impulse.

Case IX.—Charles K., aged five years. Admitted February 3, 1890, with an infantile hernia on left side and phimosis.

February 8th.—Circumcised.

March 3d.—McBurney's operation performed.

8th.—Has a mild attack of erysipelas.

April 3d.—Out of bed.

11th.—Discharged. Cicatrix firm.

March 19, 1892.—Reported for examination. Has had much bronchitis since his discharge. There is a slight impulse behind the cicatrix, but not more than on the sound side. There is no bulging of the parts.

Case X.—Alfred S., aged three years. Admitted January 3, 1890, with an infantile hernia on right side. Truss does not give good support. Child in bad condition.

March 1, 1890.—Ether. McBurney's operation performed. Took ether badly, and pulse very weak.

30th.—Wound all closed; patient up.

April 16th—Discharged. Cicatrix firm.

March 12 1892.—Examined to-day, cicatrix firm. No impulse.

Case XI.—Samuel D., aged seven years. Admitted February 1, 1890, with hernia in left side. Is said to have been operated before, and shows a cicatrix.

February 26th.—Ether. McBurney's operation performed.

April 11th.—Patient up and about.

17th.—Discharged. Cicatrix firm.

June, 1892.—Can not be traced.

Case XII.—Frank F., aged three. Admitted February 6, 1890, with infantile hernia on right side.

February 28th.—Ether. McBurney's operation.

April 1st.—Wound closed; out of bed.

10th.—Discharged. Cicatrix firm.

March 12, 1892.—Examined to-day; cicatrix firm. No impulse.

Case XIII.—Howard G., aged three years and a half. Admitted October 14, 1890, with infantile hernia on right side, with the following history: Ten days before admission was kicked by a boy in groin; much swelling of scrotum followed; has had much pain in parts, and some vomiting.

October 31st.—Ether. McBurney's operation performed.

December 7th.—Wound all closed.

January 3, 1891.—Discharged. Cicatrix firm.

March 19, 1892.—Cicatrix firm; there is no impulse.

Case XIV.—Stephen D., aged nine years. Admitted December 8, 1890, with infantile hernia on left side; has also disease of the spine. The hernia gives him much trouble and pain. Ring very large.

December 15th.—McBurney's operation performed. It was found that the sac consisted of two parts, the lower being an encysted hydrocele; above this a pulse-like constriction, and then the hernia sac above this.

January 31, 1891.—Patient up. Wound all closed.

February 10th.—Discharged. Cicatrix firm.

Can not be traced.

Case XV.—Arthur K. S., aged five years. Admitted December 15, 1890, with infantile hernia. Has been wearing a truss, but it does not support the rupture.

December 19th.—McBurney's operation performed. The sac was found to be partially obliterated in lower portion. The upper portion was packed with omentum. This was ligated and removed. Ring very large.

December 20th.—Patient comfortable as to the point of operation, but has a high temperature, 103°; this continued several days, but yielded to quinine.

January 28, 1891.—Out of bed. Wound all closed.

February 13th.—Discharged. Cicatrix firm.

May, 1892.—There has been no return of the hernia.

Case XVI.—Henry S., aged six years. Admitted February 25, 1891. Has an infantile hernia on both sides; that on the left is very large and troublesome. Can not be held with a truss.

February 27th.—Ether. McBurney's operation performed on left side. Nothing of note about the operation.

March 1st.—There has been a constant discharge of bloody serum from the upper portion of the wound. Scrotum much swollen. Temperature, 102°.

4th.—Abscess found, and the connective tissue unhealthy. Parts scraped and disinfected as thoroughly as possible.

6th.—No better. Ether. There is now found an abscess extending down into that fossa; a free opening made, and drainage-tube passed.

April 22d.—Discharge has about ceased. Wound, which is large, is granulating nicely.

May 10th.—Wound entirely healed, and patient is about.

Case XVII.—*January 8, 1892.*—Ether, and McBurney's operation done on right side.

February 8th.—Patient out of bed.

May 1st.—Discharged cured.

In the first operation I am unable to account for the infection of the wound, but that then it happened there can be no doubt. There was left a very large and far-spreading cicatrix, so that the left side of the abdomen is somewhat misshapen. There was at no time any abdominal symptoms. In regard to the future, I am fearful that the cicatrix will stretch.

Case XVIII.—James H., aged five years. Admitted March 19, 1891, with infantile hernia of left side, of large size.

March 30th.—McBurney's operation performed.

April 30th.—Wound closed. Out of bed.

May 6th.—Discharged. Cicatrix firm.

Patient can not be traced.

Case XIX.—Jule M., aged eight years. Admitted August 31, 1891, with infantile hernia of large size, left side.

October 19th.—McBurney's operation performed.

November 27th.—Out of bed.

29th.—Discharged. Cicatrix firm.

Can not be traced.

Case XX.—Arthur O., aged three years. Admitted July, 1891, with hernia on right side. Although it is small, it gives patient much trouble.

November 2, 1891.—Ether. On cutting down on to the sac the cord was found in front, and the hernia was one of the acquired variety. McBurney's operation performed.

December 6th.—Wound closed.

13th.—Discharged. Cicatrix firm.

March 12, 1892.—Examined. Very firm. No impulse.

Case XXI.—Caldwell Smith, aged fourteen years, was admitted November 10, 1891, with a large infantile hernia on right side which can not be held by a truss. Child seemed to suffer much from the rupture.

November 11th.—McBurney's operation performed.

December 10th.—Wound all closed.

14th.—Discharged. Cicatrix firm.

March 12, 1892.—Cicatrix firm.

Case XXII.—Lieman G., aged six years. Admitted December 14, 1891, with infantile hernia on left side.

December 21st.—McBurney's operation performed.

January 10, 1892.—Wound closed.

February 1st.—Discharged. Wound all sound.

March 12th.—No change.

Case XXIII.—Shuman E., aged five years. Admitted December 18, 1891, with infantile hernia on right side.

January 8, 1892.—McBurney's operation performed.

February 1st.—Wound closed.

9th.—Discharged. Wound sound. No impulse.

Can not be traced.

Case XXIV.—James McC., aged two years. Admitted December 30, 1891, with a large infantile hernia of right side.

February 29, 1892.—McBurney's operation performed. Sac filled with omentum. Ligated.

March 31st.—Wound closed. Patient discharged.

Case XXV.—Andrew B., aged nine years. Admitted February 27, 1892, with an infantile hernia on right side, of large size. Truss could not be worn.

February 29th.—Ether. McBurney's operation performed. Sac contained adherent omentum and the appendix. Omentum ligated, cut off, and removed with the sac.

April 2d.—Wound all closed. Patient discharged.

May 12th.—Returned for examination. Parts firm.

The operation performed on the first five cases was that known as Macewen's. The sac was cut down upon, ligated as high up as possible, removed, and pillars of ring sutured. On the remaining twenty McBurney's operation was performed, consisting of cutting down on the sac, separating the elements of the cord, splitting up the canal, ligating the sac high up, cutting it away, uniting the skin to the pillars, and stuffing the wound with iodoform gauze.

Twenty-four cases were examples of infantile inguinal hernia. One was acquired.

In Macewen's operation some slight suppuration followed; in McBurney's in only one has it been met.

Two patients had been operated upon before admission into the hospital, and in both of these the hernia had returned; but what operation had been done could not be found out (Cases I and XI).

Case II was operated upon twice. At the first operation the sac was only ligated with catgut—not removed—and the parts united. The hernia returned before the patient left her bed. Later, a Macewen's was done, and the cicatrix is good and sound to-day.

In two cases the appendix and a portion of the large intestines were found in the sac.

In three cases there existed a hydrocele below the hernial sac, and in one case (V) the walls of the former were an eighth of an inch thick and of almost cartilaginous hardness. In the other two cases there was a purse-like constriction separating the two cavities. In these two cases much more pain and inconvenience was complained of than in other cases. I have met with the same condition in an adult, where the discomfort and pain were so great that any kind of a support was an impossibility.

In six cases omentum has been ligated and removed, and in three cases it was incorporated with the sac.

As a rule, there has been no elevation of temperature after the operation, nor any pain, except that some complained of pain about the point of operation in coughing. No difficulty has ever been experienced in keeping the dressing from becoming soiled even in very young children. After the usual dressing has been bandaged on, a piece of gutta-percha tissue, large enough to cover the lower portion of the abdomen and extend down onto the thighs, is secured with a double spica bandage, the penis being passed through a small hole cut in the tissue. With such a covering the dressings have always been kept clean.

Up to date there has been no return in a single case, so far as heard from, after a Macewen's or McBurney's operation.

Nineteen patients have been examined during March, 1892, and the pillars found strong, as follows:

1	well;	no return or	weakening	of ring	... 6½	years.
1	“	“	“	“	... 7	“
3	“	“	“	“	... 4	“
2	“	“	“	“	... 3	“
1	“	“	“	“	... 2½	“
5	“	“	“	“	... 2	“
2	“	“	“	“	... 18	months.
1	“	“	“	“	... 8	“
1	“	“	“	“	... 5	“
1	“	“	“	“	... 2	“

One patient died three years after the operation. Up to that time he had had no trouble.

The only case about which I feel any anxiety is Case XVI, and in this on account of the amount of cicatricial tissue, and the deformity is an element of danger.

In many of these cases the operation has been of too recent a date to form any judgment as to its permanency. All that can be said is that up to date I have been unable to find a single case in which any tendency is shown of a return of the hernia.

HYDROGEN DIOXIDE AS IT IS DISPENSED.*

By HERBERT E. SMITH,
PROFESSOR OF CHEMISTRY, YALE MEDICAL SCHOOL;

WITH THE ASSISTANCE OF
HORST OERTEL,
MEDICAL STUDENT.

The instability of solutions of hydrogen dioxide and the fact that it is now kept in stock at the majority of even our smaller retail drug-stores suggested to the writer the examination of a number of samples of this agent as it is dispensed in small amounts.

Anhydrous hydrogen dioxide is a syrupy, colorless, odorless liquid, with a styptic taste and a caustic action on the skin. Its specific gravity is 1·45. It is very instable, and is therefore found in commerce only in the form of dilute solutions. The strength of these solutions may be gauged by the amount of hydrogen dioxide they contain, or by the amount of oxygen which the hydrogen dioxide contained in them evolves when it is decomposed, according to the equation $2H_2O_2 = 2H_2O + O_2$. Unfortunately, the latter method is the one in vogue, with the result that there is confusion concerning the actual strength of the solutions in use. A fifteen-volume solution is defined as one which "yields fifteen times its own volume of oxygen gas." By calculation, 1 c. c., or 1·45 grammes, of anhydrous hydrogen dioxide would yield 478·26 c. c. of oxygen, measured under normal pressure and at 0° C., and 513·27 c. c. measured at 20° C. (68° F.). Hence one gramme would yield 353·91 c. c. at 20° C. A solution containing one gramme in 100 c. c. would yield, therefore, 3·53 volumes of oxygen, and a fifteen-volume solution would contain 4·25 grammes of the dioxide in 100 c. c.

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* Read before the New Haven Medical Association, May 4, 1892.

The strength of a solution of hydrogen dioxide may be determined readily by diluting 1 c. c. of the solution to 50 c. c. with distilled water, acidulating with sulphuric acid, and adding a standard solution of potassium permanganate as long as its color is discharged. The reaction is as follows:

$$2KMnO_4 + 5H_2O_2 + 3H_2SO_4 = K_2SO_4 + 2MnSO_4 + 8H_2O + 5O_2.$$

From this equation it may be readily calculated that 315·34 parts of potassium permanganate react with 169·60 parts of hydrogen dioxide, yielding 159·60 parts of oxygen by weight. Of the oxygen, one half comes from the permanganate and one half from the dioxide. The reaction is complete. If one uses a tenth normal solution of permanganate (containing 3·1534 grammes per litre), each c. c. required in the test given above indicates the presence of 0·00169 grammes of the dioxide, and 0·000798 grammes of available oxygen, or of 0·5986 c. c. of oxygen measured at 20° C. A solution containing 5·2679 grammes of permanganate per litre is of such a strength that each c. c. used in the titration of 1 c. c. of the dioxide solution indicates a strength of one volume of oxygen measured at 20° C.

In the analysis given below there are included fifty samples collected during 1891—sixteen from New York city, twenty from New Haven, nine from Hartford, and five from Bridgeport, Conn. The samples were collected in one-ounce glass-stoppered bottles, and were examined within twenty-four hours. The maker's name was asked for in each case, and is stated below as given by the seller. No. 42 and No. 50 were sold as fit for external use only. No. 34 was obtained in an original package at the maker's, and was said to be a fresh preparation.

Summary of Results.

Grammes of H_2O_2 in 100 c. c.	Number of samples.	Acidity in c. c. of tenth normal alkali to neutralize 100 c. c.	Number of samples.
0 gramme.	4	Below 10 c. c.	6
0 to 1 "	4	10 to 25 "	17
1 " 1·5 "	3	25 " 50 "	11
1·5 " 2 grammes.	11	50 " 100 "	14
2 " 2·25 "	12	105 "	1
2·25 to 2·50 "	16	300 "	1

Analytical Results.

No.	Manufactured by—	Volumes of available oxygen at 20° C.	100 c. c. contain in grammes— H_2O_2.	100 c. c. contain in grammes— Residue at 100° C.	Acidity in c. c. of tenth normal alkali to neutralize 100 c. c.	Boric acid.	Remarks. HCl, H_2SO_4, Ba.
1	Marchand.	5·40	1·50	0·331	105	Present	HCl, good reaction. H_2SO_4, a trace.
2	Makers unknown.	8·56	2·40	0·046	14	"	HCl, good reaction. H_2SO_4, a trace.
3	Lehn and Fink.	8·86	2·50	0·039	10	....	HCl, good reaction. H_2SO_4, a trace.
4	Powers and Weightman.	7·28	2·05	0·189	21	....	HCl, good reaction. H_2SO_4, good reaction.
5	"	0·00	0·00	0·156	17	....	HCl, a trace. H_2SO_4, a trace.
6	"	8·86	2·50	0·046	12	....	HCl, good reaction. H_2SO_4, a trace.
7	"	8·74	2·45	0·043	12	....	HCl, good reaction. H_2SO_4, a trace.
8	Marchand.	7·52	2·10	0·911	34	Present	HCl, good reaction. H_2SO_4, a trace.
9	Mallinkrodt.	7·10	2·00	0·170	20	....	HCl, a trace. H_2SO_4, a trace.
10	Powers and Weightman.	7·40	2·05	0·159	23	....	HCl, a trace. H_2SO_4, a trace.
11	Marchand.	4·00	1·15	0·244	40	Present	HCl, good reaction. H_2SO_4, a trace.
12	"	8·56	2·40	0·819	70	"	HCl, good reaction. H_2SO_4, a trace.
13	"	6·55	1·85	0·614	75	"	HCl, good reaction. H_2SO_4, a trace.
14	"	8·86	2·50	0·835	65	"	HCl, good reaction. H_2SO_4, a trace.
15	Powers and Weightman.	7·28	2·05	0·156	18	....	HCl, a trace. H_2SO_4, a trace
16	Makers unknown.	0·00	0·00	0·514	59	....	HCl, good reaction. H_2SO_4, a trace.
17	Marchand.	7·70	2·15	0·780	46	Present	HCl, good reaction. H_2SO_4, a trace.
18	"	7·04	1·95	0·892	65	"	HCl, good reaction. H_2SO_4, a trace.
19	Powers and Weightman.	3·27	0·90	0·223	22	....	HCl, a trace. H_2SO_4, good reaction.
20	Marchand.	8·13	2·30	0·892	85	Present	HCl, good reaction. H_2SO_4, a trace.
21	Powers and Weightman.	6·92	1·95	0·167	19	....	HCl, a trace. H_2SO_4, a trace.
22	Lehn and Fink.	6·55	1·85	0·238	31	....	HCl, a trace. H_2SO_4, a trace.
23	Powers and Weightman.	0·00	0·00	0·121	14	....	HCl, a trace. H_2SO_4, a trace.
24	Mallinkrodt.	7·04	1·95	0·160	18	....	HCl, a trace. H_2SO_4, a trace.
25	"	7·10	2·00	0·169	18	....	HCl, a trace. H_2SO_4, a trace.
26	"	1·19	0·20	0·231	22	....	HCl, good reaction. H_2SO_4, good reaction.
27	"	6·67	1·84	0·162	19	....	HCl, a trace. H_2SO_4, good reaction.
28	Powers and Weightman.	3·15	0·89	0·237	26	....	HCl, good reaction. H_2SO_4, good reaction.
29	Marchand.	8·74	2·44	0·910	53	Present	HCl, good reaction. H_2SO_4, a trace.
30	"	5·03	1·40	0·144	16	....	HCl, a trace. H_2SO_4, good reaction.
31	"	8·13	2·30	0·145	5	Present	HCl, a trace. H_2SO_4, a trace.
32	"	8·50	2·40	0·328	54	"	HCl, good reaction. H_2SO_4.
33	Makers unknown.	0·00	0·00	0·487	75	....	HCl, good reaction. H_2SO_4, good reaction.
34	Marchand.	8·19	2·30	0·855	68	Present	HCl, good reaction. H_2SO_4.
35	"	8·25	2·35	0·560	31	"	HCl, a trace. H_2SO_4, a trace.
36	Lehn and Fink.	8·25	2·35	0·847	9	....	HCl, good reaction. H_2SO_4 ; Ba present.
37	Marchand,	4·61	1·30	0·560	30	....	HCl, good reaction. H_2SO_4, good reaction.
38	"	7·46	2·10	0·050	5	....	HCl, good reaction. H_2SO_4.
39	"	8·25	2·35	0·597	25	Present	HCl, good reaction. H_2SO_4.
40	Lehn and Fink.	6·25	1·77	0·131	7	....	HCl, a trace. H_2SO_4, good reaction.
41	Makers unknown.	6·73	1·90	0·118	46	....	HCl, good reaction. H_2SO_4.
42	Schieffelin.	7·10	2·00	0·820	6	....	HCl, good reaction. H_2SO_4 ; Ba present.
43	Marchand.	8·19	2·30	0·701	48	Present	HCl, good reaction. H_2SO_4.
44	Bené.	5·40	1·50	0·074	5	....	HCl, a trace. H_2SO_4, a trace.
45	Lehn and Fink.	7·10	2·00	0·190	58	....	HCl, good reaction. H_2SO_4, good reaction.
46	Makers unknown.	2·61	0·73	0·860	300	....	HCl, a trace. H_2SO_4, good reaction.
47	Marchand (?).	8·25	2·35	0·163	47	....	HCl, good reaction. H_2SO_4, a trace.
48	Lehn and Fink.	7·34	2·07	0·465	80	....	HCl, good reaction. H_2SO_4, good reaction.
49	Marchand.	7·95	2·25	0·525	53	Present	HCl, good reaction. H_2SO_4.
50	Schieffelin.	5·40	1·50	0·374	75	....	HCl, good reaction. H_2SO_4, good reaction.

The average of all the determinations of hydrogen dioxide is 1·78 grammes per 100 c. c. and the largest amount obtained is 2·5 grammes; this was an 8·8-volume solution. Without doubt a higher average would have been obtained in examining only large original packages. The strongest solution which we have met outside of this series is a 12-volume solution.

Reviewing the results, it is seen that fifty-six per cent. of the samples contained from 2 to 2·5 grammes of the dioxide in 100 c. c., or this percentage yielded from 7 to 9 volumes of oxygen. Solutions of this strength, therefore, may be taken as representing the better class of preparations with which we have gained our therapeutic knowledge. That eight per cent. of the samples contained no hydrogen dioxide, and that thirty-six per cent. more must be regarded as deficient, inasmuch as they contained less than two per cent. of hydrogen dioxide, shows very clearly that more care is needed in dispensing this agent. It seems reasonable to expect the necessary care on the part of the dispensers, because the method of assay is so simple. Certainly there is no excuse for dispensing material from which all hydrogen dioxide has disappeared.

Regarding the acidity, it may be seen that forty-six per cent. of the samples required less than 25 c. c. of tenth normal alkali to neutralize the acid contained in 100 c. c. This amount of alkali is equivalent to 0·210 gramme of sodium bicarbonate, or it would neutralize 100 c. c. of a 0·09 per cent. hydrochloric-acid solution. A good reaction for hydrochloric acid was obtained in thirty-three samples, and for sulphuric acid in twelve. Sometimes one was present, sometimes both. Boric acid was present in small amount in eighteen cases. These acids are either residues from the process of manufacture or they are added with the view of giving greater stability to the preparations. If they are not needed for the latter purpose, and their value seems doubtful, they must be regarded in the light of objectionable impurities.

NOTE ON

SOLUTIONS OF HYDROGEN DIOXIDE, OR PEROXIDE OF HYDROGEN.[*]

By EDWARD R. SQUIBB, M. D.,

BROOKLYN.

THE increasing use of this solution in medicine makes it very important that its quality should be closely watched and controlled. In a note on this subject read before this association on February 5, 1889, and published in *Gaillard's Medical Journal* for March, 1889, page 267, this writer asked attention to the subject and gave some very incorrect information on one important point. It is now the principal object of this note to correct the misstatements there made.

There seems to be no way of indicating the strength of solutions of hydrogen dioxide that is more convenient or so expressive as by the number of volumes of active oxygen that any volume of a given solution will yield in its application or use. That is, a fluidounce of any solution that will yield a fluidounce measure of active oxygen is a one-volume solution, and a fluidounce of any solution that will yield a fifteen-fluidounce measure of active oxygen is a fifteen-volume solution.

A three-volume solution is commonly used for gargling, and a four-, five-, or six-volume solution for spraying. Almost all the makers known to this writer send out what they call and sell for a fifteen-volume solution and the bottles are so labeled. A physician, then, orders one volume, or, say, one fluidounce, of this solution to four volumes, or, say, four fluidounces, of water, and supposes he has a three-volume solution for use, as the result. But, as will be shown further on, he really gets little more than half this strength, and so weak as to be often useless, because the makers do not supply the strength described on their labels. Mr. Charles Marchand, one of the oldest makers of this solution, gave to this writer in January, 1889, his method of standardizing his solution. He dissolved 1·852 grammes of potassium permanganate in distilled water and made the solution up to 500 c. c. with water, and stated that each cubic centimetre of this test solution used with 1 c. c. of any solution of hydrogen dioxide indicated one volume of available active oxygen.

This misstatement was published by this writer in the paper referred to above,[*] on the authority of Mr. Marchand, and without having been examined or verified. But it is now known to be very far from the truth.

Soon after the writer's published indorsement of this misstatement it was pointed out to him by Dr. William Jay Schieffelin, but over-occupation, illness, and long absence have been allowed to prevent an earlier correction.

The correct standardizing test is made by dissolving 2·832 grammes of potassium permanganate in distilled water, and then making up the measure with more water to 500 c. c. of the solution.

Ten c. c. of any solution of hydrogen dioxide is diluted with water to 100 c. c. and 10 c. c. of this dilution is measured off for the test, and a few drops of sulphuric acid is added.

Into this the permanganate solution is dropped from a graduated burette, with constant stirring, until a drop falls in that fails to be completely decolorized. Then the number of cubic centimetres used indicates directly the number of volumes of available oxygen in the solution tested.

The ordinary decinormal solution of permanganate, made by dissolving 1·578 grammes of potassium permanganate and making up to 500 c. c. of solution, will answer very well for this standardizing, but the number of cubic centimetres of this solution used for 1 c. c. of the hydrogen dioxide solution must be multiplied by 0·5594 [†] to obtain the strength in volumes of available oxygen.

A very large proportion of the solution of hydrogen dioxide used in and around Brooklyn and New York, and perhaps even throughout the United States, is made by five manufacturers, and bottles of each of these makers were bought in this market, taking care that they were freshly made, and in some cases buying a second time with such an interval between as not to get twice of the same stock. These were all carefully examined with the following results:

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[*] Read before the Kings County Medical Association, May 10, 1892.

[*] And also in the *Ephemeris*, p. 1149.

[†] Dr. Charles Rice in the *American Druggist* for January 15, 1892, p. 31.

Manufacturer.	Different bottles.	Strength in volumes.
Charles Marchand	First purchase	9·2 volumes.
" "	Second "	8·7 "
Ernest Drevet	Only "	8·4 "
Oakland Chemical Company	First "	10·9 "
" " "	Second "	9·7 "
John Béné	First "	8·6 "
" "	Second "	8·5 "
Mallinckrodt Chemical Works	First "	7·3 "
" " "	Second "	7·4 "

Upon the labels or wrappers of all of these a strength of fifteen volumes is claimed, while one only reaches two thirds of that, and two are less than half.

As made by the ordinary manufacturing processes, these lower strengths keep better, especially in warm weather, than a fifteen-volume strength, and are therefore really more practicably applicable to general transportation and use; and if a uniform strength of ten volumes was adopted by all makers, and adhered to, or even if their present products were labeled ten volumes instead of fifteen, there would be much less disappointment in the use of the agent.

There is also a considerable and variable difference in the quality of the solutions, even in those of the same maker at different times, and the quality is roughly indicated by the differing tendency to spontaneous decomposition in different bottles. The purer the solution, the less liable it is to decomposition, and this is, in a degree, independent of the strength of the solution and the temperature at which it is kept. A fairly pure solution when kept for many days in an open-glass vessel, even at summer temperatures, will grow stronger instead of weaker, because the water evaporates off faster than the dioxide decomposes.

The decomposition of the solutions is always indicated by minute bubbles of oxygen rising through the liquid to the surface, and when there are no such bubbles of gas there is no decomposition. If the solutions have not enough free acid to prevent decomposition, a single drop of sulphuric, phosphoric, or hydrochloric acids, in a 500 c. c. bottle of solution, will arrest this decomposition if no impurity be present. But if impurities be present, the decomposition will go on even in a faintly acid solution. Fairly pure solutions may be evaporated down by exposure in open vessels, or by a gentle heat on a water bath, so that any desired strength may be obtained by this concentration up to a very caustic solution of thirty to forty volumes at least; and when made distinctly acid, such solutions are fairly stable, especially when dissolved in ether, as in the caustic preparation sold under the trade name of Pyrozone.

A ten-volume solution is about as strong as is ever needed in medicine, and such a solution, if fairly pure, can be transported, kept, and used without any special difficulty, though with a continuous loss of strength, at all seasons of the year in temperate climates, with the exception of occasional bottles which decompose from some accidental cause. But in hot climates and in hot weather a rapid decomposition is the rule, and the agent is only to be trusted when freshly made.

Solutions of about three-volume strength are needed for gargling and of about five-volume strength for spraying, and they are more frequently required stronger than weaker. If the market solutions be diluted by the labels—fifteen volumes—so as to get such strengths, they will be only from one half to two thirds of the supposed strength, and too weak to be effective. It must be regarded as very unfortunate when so important a medicinal agent is so badly managed through trade influences.

The hydrogen dioxide of any solutions above one or two volumes' strength is very easily decomposed by contact with albuminoids, and, as its activity in use depends upon this decomposition in contact with the secretions and excretions of the surfaces to which it is applied, the weak solutions which do not so decompose on contact must be nearly useless.

The presence of a free acid is absolutely necessary in all solutions of hydrogen dioxide, since without this decomposition is immediate; but much free acid protects no better than a little, while it renders the solution and its dilutions hurtfully irritant to diseased and sensitive surfaces. All the solutions examined for this note are more acid than they need be, but in the first two makers the excess is inexcusably great and more than three times greater than the others. Otherwise all are practically and sufficiently pure.

Much stress is laid by all the manufacturers upon their products being harmless, and they certainly justify this claim; but when diluted for use by their fifteen-volume labels they are often also useless. To obtain the best effects the solutions should always be used as strong as they can be well borne, and as frequently as is practicable. Any amount that is incidentally swallowed can never be hurtful, but may be useful.

REPORT OF ABDOMINAL OPERATIONS.*

By D. TOD GILLIAM, M. D.,
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The abdominal surgeon is always looking for surprises and always being surprised. In apparently the most simple cases he is often confronted by the most formidable complications, and conversely the apparently desperate ones occasionally prove the most manageable. Case reading has therefore a value of its own which can not be displaced by generalized deductions or the so-called typical descriptions.

After one has mastered the rudiments of abdominal surgery there is nothing so attractive or instructive as the recital and discussions of individual cases with their varying phases, their many perplexities, and the manner in which they were met. The following brief record of cases occurring in my practice during the last eleven months, while, in the main, commonplace enough, contain some elements of interest which I place at your disposal as a small contribution in the line of abdominal surgery.

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* Read before the Ohio Medical Society at Cincinnati, May 5, 1892.

Case I. *Ovariotomy.*—Mrs. C., Pine Grove, Gallia County, Ohio, aged fifty-five. Mother of a large family of children; began to enlarge six years ago. Operated Sunday, May 24, 1891, removing a compound ovarian cyst of forty pounds' weight. There were no complications and the patient made an uninterrupted recovery, with the exception of a swelling and soreness of left leg, which I attributed to phlebitis. No drainage.

Case II. *Ovariotomy.*—Mrs. O., Franklin County, Ohio, aged forty. One child; began to enlarge one year ago. Operated Monday, May 25th, removing multilocular ovarian cyst of fifteen pounds. No complications. She was of nervous temperament and pulse mounted on second day to 118; small and wiry. For several days it fluctuated between this point and 90, but gradually fell to normal. Her convalescence was retarded by an inability to stand erect which required weeks to overcome. No drainage.

Case III. *Broad Ligament Cyst.*—Mrs. B., Columbus, Ohio, aged twenty-nine. No children. Has suffered much with a pain in the hypogastric region in the left side. Examination reveals cystic enlargement at site of pain and tenderness. Operated June 2d. Cyst located in left broad ligament; was dug out, when it escaped from my fingers and rolled away. It was finally located on the right iliac region and removed. Hæmorrhage from the matrix very free and persistent, which was only stanched by carrying sutures under the floor of the cavity. The pulse-rate never went above 100, but she suffered greatly from pain for thirty-six hours. The catheter had to be used for four or five days. She made a good recovery. Flushing and drainage.

Case IV.—Mrs. B., Franklin County, Ohio, aged fifty-six. Has been afflicted with abdominal growth for years, and for the last eight months confined to bed unable to move. She suffered continually and greatly. Is exsanguinated and feeble to a degree that presages rapid dissolution. The extreme tenderness precludes satisfactory examination, although a tumor, hard, nodular, and irregular in outline, fills the abdomen to above the umbilicus and the upper part of the pelvis. An exploration being suggested and eagerly accepted, on June 8th cut down upon it. I found a solid, elastic tumor, firmly adherent everywhere, and sarcomatous in appearance. This was incised and long needles thrust into it, but nothing escaped but blood. Its tendency to bleed was very strong, and, after stitching up the cut, the thermo-cautery had to be used at the site of puncture. The patient was greatly prostrated and suffered much for several days. She gradually recovered, and in six weeks drove to my office over rough country roads a distance of seven miles, when I found the tumor appreciably diminished in size. I examined her again a few weeks since and can find no vestige of the tumor, although there is a degree of abdominal tenderness and an inclination to harden the abdominal muscles that prevents an entirely satisfactory examination. She enjoys fair health and her appearance has changed wonderfully. This is one of those inexplainable cases wherein an exploration cures.

Case V. *Ovariotomy.*—Miss S., Somerset, Ohio, aged thirty-seven. Ovarian cyst. Operated September 16th. Drainage. Recovery uneventful.

Case VI. *Ovariotomy.*—Mrs. S., Wellston, Ohio, aged twenty-five. One child, two years old. The cyst was a large one, but entirely uncomplicated, and was quickly removed. She was put to bed in good shape. At this time I was called from the city, and on my return on the fourth day found her septic. She died on the seventh day. I am persuaded that the drainage-tube was the cause of death. In similar cases I do not now use it.

Case VII. *Operation for Ventral Hernia.*—Mrs. O., London, Ohio, aged twenty-eight. Had been operated on at Cleveland four years ago for ovarian tumor. A long incision had been made, and tedious suppuration ensued. A hernia gradually formed and eventually assumed enormous proportions. Apparently the entire contents of the abdomen, except the fixed organs, occupied the hernial pouch. An exploration revealed the impossibility of using the peritoneal operation, and the Simons method was used. She made a tedious convalescence, and a secondary operation was necessary before complete union could be secured. She is now well and can hardly find words to express her gratitude.

Case VIII. *Wandering Ovule.*—Mrs. S., Franklin County, Ohio, aged twenty-six. Was taken suddenly ill with pelvic pain and prostration. An abdominal enlargement was detected. Recurring attacks kept her in bed for five weeks. Chills and sweating, with varying temperature, finally induced me to advise section. As she lived six miles in the country, she was brought to the city, and the operation performed November 12th. As she was very short and fat, an incision long enough to admit the hand was necessary for exploration. A cyst containing a quart of limpid serum was found attached to the region of the bladder and could not be removed. It was drained and stitched to the abdominal walls. This is probably what Tait classifies as a wandering ovule. She made an uninterrupted recovery.

Case IX. *Laparotomy for Small Tumor.*—Mrs. W. F. H., Thornville, Ohio, aged twenty-four; married two years; no children. A year ago, during sexual intercourse, she was seized with a severe pain in right hypogastrium, and fainted. From that day to this she has suffered much from pain and soreness in the same locality. Examination revealed an enlargement, apparently cystic, in front of and to the right of uterus, about the size of an egg. The uterus was pushed to the left. Upon cutting down, I found the swelling apparently cystic in the situation indicated, but very indefinite in outline. An incision was made into it, but nothing but a loose-meshed muscular and connective tissue encountered. This, of course, did not admit of removal, but the left ovary, which was found diseased, with its corresponding tube was removed. She recovered promptly.

Case X. *Removal of Uterine Appendages for Uterine Fibroid.*—Miss D. N., Residence City, aged twenty-four, has uterine fibroid size of double fist, from which she suffers beyond endurance. The tubes and ovaries were removed December 9th, one of the latter being cystic. She recovered without an untoward symptom.

Case XI. *Removal of Uterine Appendages.*—Mrs. P. Q., Hardin County, Ohio. Suffering for years with intractable uterine hæmorrhages. After exhausting all the usual and unusual remedies and repeated curettings without avail, the tubes and ovaries were removed December 10th. The right ovary and tube were adherent, the left ovary enlarged and cystic. She was a very intractable patient, and suffered from psychological disturbance almost to the point of insanity. Hæmatocele of the right broad ligament ensued, and, despite warning, she got up and left the hospital on the ninth day. She suffered a back-set as a consequence, and the last heard from her, six weeks afterward, she was just convalescing from the same.

Case XII. *Removal of Uterine Appendages.*—Miss M. F., from Minnesota, aged twenty-three. Had oophoritis some years since and was treated by Dr. Byford, of Chicago. Tubes and ovaries removed December 30th, much hæmorrhage following, which apparently subsided after half an hour. She was thoroughly irrigated, and a drainage-tube was inserted. The tube was aspirated every hour, and from half an ounce to an ounce of blood removed each time. During the day vomited several times, after which the quantity of blood increased to two or three ounces, and so continued through the night. On the morning of the second day vomited greenish fluid. An ounce and a half of blood at each aspiration, which gradually diminished.

On morning of third day looks and feels better; blood progressively diminishing.

During operation on patient in adjoining room the smell of ether sickened her and she vomited repeatedly; bleeding increased; she is restless; complains bitterly of pain; looks bad. Pulse, 125. Ordered calomel, to be followed by salts in broken doses.

During the preceding night bowels moved freely, hæmorrhage diminished, vomiting ceased, and she passed flatus.

This case gave me much uneasiness. She continued to go up and down with a pulse-rate varying from 112 to 135. Chills, sweats, vomiting, purging, great prostration, and along with it all a large hæmatocele formed on the right side. On the seventh day the tube was removed with difficulty, bringing with it a plug of clotted blood and fibrin. It had been gradually elevated after each aspiration. A fistula ensued, and, after three weeks more of fluctuating improvement, she was discharged with a slight remaining fistula. I saw the patient some weeks subsequently, and she was well and happy.

Case XIII. *Hysterectomy for Uterine Cancer.*—Mrs. M. E. S., Columbus, widow, childless, aged fifty-two. Examination revealed extensive cancer of body of the uterus. The uterus was removed on February 12th, and the patient made an uninterrupted recovery.

Case XIV. *Removal of Uterine Appendages.*—Mrs. C. H., Columbus, Ohio, aged thirty-two, six children. The patient has been bedfast for many weeks with circumuterine inflammation. Operated on January 2d. The adhesions were very dense, implicating everything in the vicinity. A large quantity of pus escaped while breaking adhesions. The bleeding was profuse. Tube removed on third day. All went well until the fifth day, when the pulse suddenly mounted to 125, with great pain and much tenderness of abdomen and anxious expression. This was followed on the sixth day with an abundant discharge of fæcal matter through the tube-opening. The alarming symptoms immediately abated, and in due time the fistulæ healed, the patient being discharged on the twenty-sixth day.

Case XV. *Ovariotomy and Salpingectomy.*—Miss E. F., aged thirty, La Porte, Ind. This was a case of simple ovarian tumor, and presented no difficulties, but the corresponding tube was of the size and appearance of the small intestines. It was also removed on March 3d. She recovered promptly.

Case XVI. *Ovariotomy.*—Mrs. S., Vaughnsville, Ohio, aged fifty-two. This was an uncomplicated ovarian cyst of fair size. Operated March 12th. She recovered promptly.

Case XVII. *Parovarian Cyst.*—Mrs. M. M., Marietta, Ohio, aged twenty. Operated March 18th for parovarian cyst. Recovered.

Case XVIII. *Hysterectomy for Uterine Fibroid.*—Miss E., Cincinnati, Ohio, aged forty-two. Large subserous uterine fibroid, lying across brim of pelvis and filling abdomen. On section, April 8th, found intestines and omentum adherent to upper and back part of tumor. Intestines were also adherent to abdominal parietes, across the track of the incision, half way between the umbilicus and xyphoid. These could not be separated without great danger, and the removal of the growth through the opening rendered difficult in consequence. It was finally brought through and the *serre-nœud* applied. She made an uninterrupted recovery.

Case XIX. *Removal of Uterine Appendages.*—Mrs. M. S. Marietta, Ohio, aged twenty-six, has suffered for the last four years, being confined to bed most of the time. Operated on April 11th. Tubes and ovaries almost disorganized, and intestines very dark and soft. Succeeded in getting the parts away, as I thought, without injury to important structures, but a few hours afterward a fæcal odor was perceptible, when contents of tube were withdrawn. At two o'clock the succeeding morning fæcal matter appeared in the tube and the odor was horrible. On the third day gas escaped from the tube. The tube was removed, and all went well until the eighth day, when, after brisk catharsis, fæcal matter again made its appearance through the fistulous opening in large quantities. After this it gradually subsided, and on the eighteenth day she was sitting up, the fistula having closed to within half an inch of the surface, and the bowels having acted a number of times without accident. She is now rapidly improving. The point of interest in this case is the immunity of the peritonæum from the results of fæcal extravasation coming on so soon after operation.

Case XX. *Exploratory Laparotomy.*—Mrs. B. T., Columbus, Ohio, aged twenty-six, one child. Had been an invalid since before marriage. Is said to have had oophoritis, followed by peritonitis, three years ago, in which her life was despaired of. A long, serious illness followed the birth of her child—about twenty months since. On examination, failed to find serious trouble with the tubes or ovaries, but the condition was marked on the right side by a tense swelling, which was exceedingly tender. Indeed, the entire hypogastric region and vaginal vault were so tender as to greatly embarrass efforts at examination. She had paroxysms of great pain which usually lasted several hours, and were uncontrollable with even large doses of morphine. The last menstruation had been delayed and was scant, without apparent cause; as with all of her previous troubles, there had been no variability in this function. The swelling increased and the paroxysms became more intense. Here was a history pointing to a circumuterine inflammation of several years' standing, a delayed and scant menstruation, a tense and abnormally sensitive enlargement in the region of the right broad ligament, and paroxysmal sickening pains, gradually increasing in severity. Of course, the child was not two years old, but that goes for little. Any one would have feared ectopic gestation. I laid the matter before the family in all its aspects, and left them to decide whether or no an exploration should be made. Two questions were put to me. "Is the operation free from danger?" "Do you expect to find an extra-uterine pregnancy?" To the first I answered that no surgical operation is free from danger, and especially an invasion of the peritoneal cavity. But, on the other hand, an ectopic gestation, should it exist, was much more dangerous than the exploration. To the second question I answered: No, I do not expect to find an ectopic pregnancy, but I fear it. Furthermore, I stated that I was not there to urge or even to ask for an exploration, but to make a statement, and it was left entirely for them to decide what course we should pursue. They decided in favor of interference, and accordingly, on April 13th, the exploration was made. I found tubes and ovaries on both sides healthy, with no indication of pre-existing disease, and I found an hæmatocele in the right broad ligament, which was not interfered with. Notwithstanding it was only twelve minutes from the time the first incision was made until she was bandaged and ready for bed, she was greatly shocked, and within a few hours presented a fearfully sunken appearance. On the third day she began to rally, and on the tenth was sitting up, the first time for over two months. The hæmatocele is rapidly disappearing.

Case XXI. *Laparotomy for Cyst of the Broad Ligament.*—Mrs. C. F. M., Columbus, Ohio, aged forty-five. No children. About four years ago had removed ovaries and one tube, the right tube being inaccessible. She got better for a while, then began to complain of the right side, which was always tender. This became so unbearable that a secondary operation was decided upon. The line of incision was to the left of the median line, and the bowels were found so firmly adherent along the line of the first incision that it was deemed imprudent to interfere with them. A small broad ligament cyst was found, which, while endeavoring to shell out, bursted under the finger. It was dissected out with a portion of the remaining tube. She recovered promptly, although suffering much from rheumatic pains, to which she has been subject. The date of this operation was April 25th.

Case XXII. *Removal of Uterine Appendages.*—Miss A. W., Columbus, Ohio, aged twenty-eight, a confirmed neurasthenic, was sent to me two or three months ago to have the appendages removed. On examination, I could not find sufficient cause for interference, and declined to operate. She went on from bad to worse, had profuse and frequently repeated menstruation, was rapidly loosing flesh, was tortured day and night with pelvic pain, and finally I yielded to the importunities of her physician, herself, and her relatives, and operated on April 28th, shielding myself behind the metrorrhagia as an excuse. The tubes were healthy. A small parovarian cyst was springing from the left broad ligament, and the right ovary was cystic, bursting and collapsing under the finger in attempting to bring it to the surface. The broad ligament was tense and unyielding, the mesosalpinx very short, and it was with the utmost difficulty that the tubes and ovaries could be delivered. The patient has been very nervous, but is otherwise doing well and her recovery is now assured.

The only death in this list of twenty-two cases occurred in the simplest case in the lot, and can, I think, be attributed with much certainty to the careless handling of the drainage-tube, as the nurse was overworked and had in charge a number of other cases, some of which were suppurative. This I did not know at the time.

50 North Fourth Street.

POSTURE IN PARTURITION.

By J. LINDSAY PORTEOUS, M. D., F. R. C. S. Ed.

From the earliest periods of medical literature, posture in parturition has taken a prominent place, and justly too, as its influences are many and its importance is great. Some of them aid, others retard the function. Some are fœtal, others maternal.

We will only mention a few of the postures which have obtained favor at various times and in various countries.

The *standing* position has been much lauded by several obstetricians in the earlier days of this century; notably among them was Burns, a British obstetrician of great and varied experience. He contended that gravity was in that position used to a greater extent than in any other to facilitate the expulsion of the child, and that the uterine contractions were excited by the constant pressure of the child on the os, which was kept thoroughly moistened by the secretions running freely out; that the constant weight of the child tended to force it out, were it not prevented by the unrelaxed soft parts, more quickly and easily than if muscular effort were required to push it along a horizontal plane. The objections to Burns's argument are twofold—viz., those relating to the child and those to the mother. Those to the child are rupture of the funis, and risk of it falling on to the floor. Those to the mother, flooding, inversion of uterus, evulsion of placenta, and laceration of perinæum, besides causing unnecessary fatigue. The gravitation theory advanced by him is quite untenable, seeing that the axis of the uterus is in a line with that of the pelvis.

No doubt that during the first stage the uterine action may be increased by the act of walking about, and, if the patient is strong enough, there can be no objections to her doing it for a short time; but as one object ought to be to husband the patient's strength for the final effort, careful watch should be kept, in order that she may not be fatigued.

Another position is that of *kneeling.* This may assume two different postures—viz., kneeling with the arms or elbows resting on a chair or side of the bed, or hands held by a nurse—*i. e.*, with head higher than knees; and secondly, with head or elbows resting on the same plane as the knees. Every obstetrician of experience must have noticed that when a woman is standing on the floor, when seized with a pain, she almost invariably drops on her knees, folding her arms, places them on the most convenient piece of furniture, and lays her head on them, thus remaining till pain is over. For this reason this has been called the "normal posture."

Aveling states that "history certainly proves it to have been widely used in all ages and places." He quotes Chapman's translation of *Homer*, where he places Latona in this position during parturition:

> "When, with her fair hand, she a palm did seize,
> And staying her by it, stuck her tender knees
> Amidst the soft mead, that did smile beneath
> Her sacred labor, and the child did breathe
> The air in th' instant."

This posture, no doubt, is far superior to that of standing. In it the risk of the fœtus being injured by falling is avoided, and the bed prevents the whole of the body from being expelled, as the distance between the bed and the uterus is so short that the full weight of the child can not invert the uterus by dragging on the placenta.

In the second or expulsion stage this posture secures the greatest gravitatory power of the child, as the pelvic outlet is perpendicular.

The other knee position mentioned above is by no means a comfortable one, and certainly does away with the influence of gravitation, therefore is not worth considering further.

The *sitting* posture, once very popular in Europe, is now seldom used. Chairs and stools of great variety have been invented for this purpose. We have on several occasions attended patients who insisted upon this posture, and who claimed for it that it made labor more easy.

Heister well describes one sitting method as follows: "Two common chairs of the same height may be placed together about six or eight inches distant from each other, and tied fast in that position, that the patient may sit with a thigh upon each chair, and the genitals hanging over the intermediate space betwixt them, by which means the os sacrum and coccyx have their free liberty to recede at the time of excluding the fœtus." From our experience of this posture we can not see that it helps the patient, but rather seems to retard the progress of the child by weakening the mother.

Dorsal reclination has been referred to by Aveling in his work on postures as being very commonly adopted still in some countries. He gives a sketch of a sculpture found at Golgas in Cyprus, in a temple erected in honor of Baal and Ashtoreth, the divinities of generative and reproductive power. The date of the original is 300 B. C.

We can appreciate this position in the *first* stage of labor, as it gives the full gravitatory force of the fœtus; but in the second stage it does more harm than good, as the head has to *ascend* through the pelvic outlet; consequently there is no aid from gravitation. Besides this disadvantage, the coccyx will certainly be pressed more or less upward from pressure of the mattress or pillow placed beneath the buttocks. There is also a greater risk of perineal laceration, as the patient, from struggling to eject the fœtus, is apt to slide downward and so tighten the perineal skin and integuments. Aveling states that thirty-nine per cent. of women so delivered have laceration, while in other positions the percentage is fifty-seven.

The side or lateral recumbent position seems to me, of all others, the best. It has been popular in Great Britain for over two hundred years, and perhaps longer. Feilding Ould, and Burton, in their books on obstetrics, published, respectively, in 1748 and 1751, recommend the lateral posture, without, however, specifying right or left. In 1754, Pugh, of Chelmsford, England, in his *Treatise on Midwifery*, was the first to advise the left lateral position. This position has much in its favor for digital examination in all stages and during the whole course of the second and third stages, and, as Pugh says, "it is certainly the most decent," as the operator is behind his patient, which is grateful to the modest primipara, and there is absolutely no necessity for exposure. During the first stage, except when an examination is made, the patient may be allowed any position she has a mind to, the dorsal recumbent being as good as any when she has some point of resistance for the feet and hands. Position takes an important part, however, in the second stage, and, to our mind, the one we are now discussing has most to be said in its favor. The negative reasons why it is the best are the disadvantages already mentioned in the kneeling and standing postures, and which do not obtain in this position. The positive are that, by raising the shoulders, the gravitatory aid, to a large extent, is given. The risk of perineal laceration is lessened, as there is no stretching of the soft parts. The physician has more freedom of action, as neither the bed nor any part of the patient impedes him. He may sit placidly and comfortably in his chair without breaking his back stooping over his patient, and thus avoiding mental irritation or showing impatience. In instrumental and version cases, by laying the patient transversely across the bed, with the thighs flexed on the abdomen, he can use one or both hands without the necessity of having the limbs held apart by an assistant or the slightest exposure made, as a little practice will enable him to do either beneath the clothes. The risk of perineal laceration with instruments is by this posture reduced to a minimum, as the necessary precaution of supporting the perinæum during the passage of the head is much more easily accomplished. And again, in version, when the head is to be extracted, its weight is taken off the perinæum and placed on the left side of the vagina.

In conclusion, I would ask those who have only used the posture of dorsal reclination to try the left lateral recumbent position, and I am sure that they will find their percentage of perineal lacerations much reduced.

Note.—I maintain that in all primiparous cases the perinæum is lacerated to some extent, and consequently only agree with Aveling's percentage if he includes both multiparous and primiparous cases.

Correspondence.

LETTER FROM MUNICH.

The Waters of Wiesbaden and Homburg.

Munich, *July 18, 1892.*

Were one to undertake the description of every watering place in southern Germany, the task would prove a most difficult one for the writer, and for the reader the result would be most uninteresting and monotonous. As these various places differ only in minor details, all possessing a more or less invigorating climate, one being slightly warmer than the other, and the analyses of the waters showing but slight differences in the proportion of certain inorganic constituents, a description of two of these places, and preferably two of those best known, will give a general idea of all. The places of which I intend writing are Wiesbaden and Bad Homburg.

Although these places are forty miles distant from each other, they differ very slightly as regards the character of the climate, the latter being a few degrees Fahrenheit cooler, as the result of its geographical position. They both possess saline springs. Those of Wiesbaden, being of a deeper origin, are consequently thermal; those of Homburg, being derived from the superior strata of the earth, are cool.

Wiesbaden is a city of about 65,000 inhabitants, prettily situated in the valley of the Taunus, a range of mountains resembling the Catskills in our country. Being surrounded by mountains, it is naturally protected from the north wind, and the advantageousness of this site, combined with a moderate degree of aerial moisture, renders the climate most equable. Wiesbaden is visited largely by Americans and English. The climate is mild and the season begins in the month of May and lasts until October. Many people stay here the entire year. This place has the reputation of being a curative resort, on account of its thermal springs, the principal ingredient of which is sodium chloride. These waters are taken internally for catarrhal conditions of the respiratory and digestive tracts and for the rheumatic and gouty diatheses, and used externally as baths for subacute and chronic rheumatism, gout and nervous diseases thereon dependent, and all cases in which warm baths are called for. For neurasthenics Wiesbaden is a capital place, although inferior to Homburg. It is quiet, the weather during the months of May and June and September and October is cool and agreeable, and within half an hour's walk are the hydropathic institutes of Dietenmühlen and Nerothal, where the most scientific application of cold water is made. Here are congregated people suffering from all grades of neuroses, from general neurasthenia to cerebral softening. Usually some slight improvement is manifest after a course of treatment.

There are no special bathing establishments in Wiesbaden, such as exist at Homburg and Baden Baden; but nearly every hotel, and especially those which are called hotels and *Badhäuse*, are provided with bath-rooms in abundance, and either salt-water or sweet-water baths may be had at any temperature. They are usually taken an hour after breakfast, the correct range of temperature is between 90° and 98·5° F., and the duration not more than fifteen minutes. Rest in bed for an hour should follow each bath.

The principal spring here is the Kochbrunnen, the temperature of which is 160° F. It contains sodium chloride, and the water should be drank about an hour before breakfast. Half a glass is the quantity with which to commence, and two glasses is the maximum amount to be taken.

It is not my intention in this letter to enter into the pros and cons of the advantages which these waters may possess, but I take occasion to state *en passant* that the baths and waters are abused to an almost incredible extent, partly through lack of judgment and partly through the advice given by the local medical men; the theory being that, as a cure lasts but three weeks, it is necessary to drink as much water as the patient can stand, and, as the number of baths supposed to be beneficial is not less than twenty-one, that means a bath every day, which is exhausting in many cases.

I mention this state of affairs as a matter of caution to our physicians who send patients to the watering places and advise them to consult a local practitioner. The analyses of the waters can be found in any work on the subject, and the descriptions of the various places are to be had for the asking; so it is far better for the physician at home to give conservative advice than send a patient to a stranger who will in all probability change the diagnosis made and treat the patient *in modo sui generis*, with disastrous results, as I have had the opportunity of observing in several cases.

A *résumé* of the various indications for the use of the waters as prescribed by the local practitioners reminds me of the indications for the use of opium as found in Bartholow's, Wood's, and other works on therapeutics. In other words, their name is legion.

There are many beautiful walks and parks to be seen here, and those who avail themselves of this opportunity for healthful exercise usually derive much benefit from this course of treatment. In fact, it is my opinion that the cures effected here are due principally to the perfect hygiene and to the climatic change.

Homburg is a much smaller place than the one which I have just described, having a population of about 9,000 inhabitants. As it is situated at an altitude of 189 metres above the sea, on a hill which is almost as high as the surrounding range of the Taunus, it is not so much protected as Wiesbaden is from the north wind. The weather is cool throughout the entire summer, the temperature seldom rising above 86° F. on the warmest days. The usual temperature during July is about 75° F. (in the shade). The air is dry and balmy, and one noticeable feature of the place is that the evenings are always cool, which is most desirable during the summer. The season begins in July and lasts until September. Those who have taken an early "cure" at Wiesbaden and Baden Baden are often much benefited by an "after-cure" here, for during the months of July and August the weather is delightful, whereas in many other watering places it is warm and in consequence depressing.

Homburg is the resort of the English-speaking world *par excellence*. The Empress Frederick spends her summers here and is the universal favorite of the people on account of her amiable and unassuming manner. Her presence here causes frequent visits from her brother the Prince of Wales, and other members of the English and other royal families, and thereby gives society an unusual tone and brilliancy. With its beautiful parks and promenades, it would be difficult to find a more idyllic spot than Homburg.

The two springs which are used to the greatest extent are the Elizabethenbrunnen and the Stahlbrunnen. The former contains sodium chloride principally, sodium sulphate being noticeably absent; the latter contains carbonate of iron with sodium chloride; and both contain carbonic dioxide. The water, being of a temperature of 52° F., is very agreeable to drink.

The Elizabethenbrunnen depends for its therapeutic application upon the presence of a large quantity of sodium chloride. It is used in the rheumatic and gouty diatheses and in functional diseases of the liver, stomach, and intestines, having a mild laxative action, which can be increased by taking larger quantities of the water. Two glasses at a time is a maximum quantity. The Stahlbrunnen is a very mild chalybeate spring, and from the amount of iron which it contains, a quarter of a grain to a glass, I am rather skeptical about its actual value as a remedial agent in anæmia, chlorosis, etc.

The Kaiser Wilhelm's Bad, one of the finest establishments of the kind in Europe, is a large building having externally the appearance of a museum rather than a bathing house. It is situated in a large park near the springs. All the bath-rooms are light and have the most perfect ventilation. The baths are of zinc, highly polished, and scrupulously clean; the water used is either sweet or mineral. The latter not containing a sufficient quantity of carbon dioxide, it is forced in by pressure, and the water brought to the proper temperature artificially. Pine-needle extract is often added to the baths.

Besides these baths, there are douches of every description (*en pluie*, *ecossais*, *droits*) and varying strength—*i. e.*, as regards the size and force of the stream used. They are employed in sciatica, rheumatism, neuralgia, neurasthenia, etc. I must not omit to mention the large swimming tank, which is very popular. The so-called mud-baths are composed of the earth and turf which is collected from the neighboring hills. The roots, stones, etc., having been removed, the remaining portion is put into large wooden tubs and is brought to a proper consistence and temperature by the addition of water. The patient is covered to the neck in this mass and remains there for a period of time varying from fifteen minutes to an hour. The dirt is then removed from the body by a douche, and this is followed by rest in bed of about two hours. The after-effect is very depressing, but good results are said to follow. The indications are rheumatic and gouty thickenings, exudations, and fibrous ankylosis, and the action is similar to that of massage and also occasions diaphoresis. Magnetic baths are also used, but their value is very doubtful.

The Death of Dr. Anthony Ruppauer, of New York, is announced as having occurred in Pittsburgh, Pa., on Sunday, the 31st ult. Dr. Ruppauer, who was a native of Sweden, was sixty-five years old. He was registered as a graduate of the Harvard Medical School, of the class of 1857. During the early years of his professional career in New York he was known as a laryngologist, but he subsequently became a general practitioner.

The Jefferson Medical College, of Philadelphia.—The *Medical News* is authoritatively informed that Professor Da Costa has discontinued his connection with the faculty. The *News* truly says: "This announcement can occasion only profound regret among the friends and alumni of the college."

THE
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A Weekly Review of Medicine.
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Edited by Frank P. Foster, M. D

NEW YORK, SATURDAY, AUGUST 6, 1892.

CHLORALAMIDE.

Professor Charteris, who holds the chair of therapeutics and materia medica at the University of Glasgow, has recently advised the treatment of seasickness by means of "chlorobrom," or a mixture of equal parts of chloralamide and potassium bromide in solution. An adult takes thirty grains of each of those drugs in an ounce of water or other liquid; that is to say, sixty grains of the so-called "chlorobrom" may be considered a full dose. Dr. Charteris's letter may be seen in the *British Medical Journal* for June 18th, and it contains some details of clinical experiment with the drug and his summary of conclusions. He concludes that the drug is peculiarly free from objections, is absolutely harmless, and will alleviate seasickness when it does not prevent it wholly. The effect is produced, of course, by inducing sleep. The patient should cleanse the *primæ viæ* before the day of sailing arrives. The "chlorobrom" should be taken an hour or two before rough water is reached, and the patient should then lie down and close his eyes. Sleep of a refreshing and agreeable quality may be expected, lasting from six to eight hours. One patient, who was awakened by the violent tossing of the steamer, stated that in the night, when he was aroused so far as to notice the motion, the rocking of the vessel produced only pleasurable sensations.

In a recent number of the *Brooklyn Medical Journal* there appeared a study of two hundred and eighty cases treated by chloralamide, by Dr. James Wood. The writer offers the following as a palatable hypnotic combination, suitable for use in private practice: Chloralamide, two drachms; compound tincture of cardamom, an ounce. These should be mixed well, and half an ounce each of syrup of orange-peel and syrup of raspberry added. The dose is from a dessertspoonful to a tablespoonful, repeated if necessary. The larger dose above mentioned represents thirty grains of the drug, while forty grains may be considered as "the best hypnotic dose for an adult." The best time for taking the full dose is just before going to bed. The sequels of such dosage are not disquieting, and no centric symptoms of any moment have been noticed. The drug should not be used in a larger quantity than a hundred grains in a day, and then only under observation.

MINOR PARAGRAPHS.

AN ENGLISH INDUSTRIAL HOME FOR EPILEPTICS.

According to the *British Medical Journal* for July 16th, there is a movement on foot in medical and philanthropic circles in London to secure subscriptions to a sum of £10,000 sterling to start a colony for epileptics near that city. It will be managed on the plan of the Bielefeld colony.

THE NEW YORK STATE LUNATIC ASYLUMS.

As will be seen from a notice published in our advertising columns relative to a competitive examination to be held of candidates for appointment as assistant physicians in the various State hospitals for the insane, there are strong inducements for young physicians to compete in case they have a bent for the study of insanity.

A NEW FRENCH JOURNAL OF SURGERY.

We have received the first number of a new monthly journal entitled *Archives provinciales de chirurgie*. Notwithstanding its title, it seems to be edited and published in Paris. There is undoubtedly a field for the *Archives*.

DR. SAJOUS'S ANNUAL.

We are glad to learn that the excellent *Annual of the Universal Medical Sciences*, edited by Dr. Charles E. Sajous, of Philadelphia, continues to receive the substantial support of the profession. We learn that it is Dr. Sajous's intention to bring out soon an edition in the French language, which can not fail to enlarge the number of its readers decidedly.

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending August 2, 1892:

DISEASES.	Week ending July 26.		Week ending Aug. 2.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	1	0	0	0
Typhoid fever	36	12	33	9
Scarlet fever	50	8	53	7
Cerebro-spinal meningitis	1	1	1	1
Measles	186	22	155	22
Diphtheria	69	36	58	27
Small-pox	6	4	3	1
Varicella	0	0	0	0
Whooping-cough	0	0	2	1

The American Social Science Association.—The general meeting of 1892 will be held in Saratoga, beginning on Monday, August 29th, and closing on Friday, September 2d. The opening address will be given by the president, the Rev. H. L. Wayland, D. D., of Philadelphia, on Monday evening at eight o'clock. On the same evening, at nine o'clock, the Rev. J. M. Buckley, D. D., will address the association. The programme of the Department of Education includes the following titles: Remarks by the chairman, Merrill Edwards Gates, LL. D., president of Amherst College; the report of the secretary, Dr. Louise Fiske Bryson, of New York, on Education as a Therapeutic Measure; a paper by Miss C. M. Hewins, of the Hartford Library, Connecticut, on Public Libraries as a Factor in Education; a paper on The Educational Value of Modern Economics, by Starr Hoyt Nichols, Esq., of New York; a paper on Art Education in American Life, by Myra B. Martin, of New York; an address on The Training of the Mentally Defective in Childhood, by Dr. Isaac N. Kerlin, of Elwyn, Pa.; and a report by the general secretary on Training Insane Women to Domestic Industry. The programme of the Department of Health gives these titles: Remarks by the chairman of the department, Dr. Frederick Peterson, of New York; a report by the secretary of the department, Dr. W. D. Granger, on the Work of the Health Department since its Organization; a paper by Dr. Matthew D. Field, of New York, on The Examination and Commitment of the Public Insane in New York City; a paper by Dr. Ralph L. Parsons, of Sing Sing, N. Y., on Voluntary Commitment of the Insane to Asylums; a paper by Dr. Henry Ling Taylor, of New York, on American Children Hygienically Considered; an address by Dr. W. W. Keen, of Philadelphia, on The Modern Surgery of the Brain; and a paper by Dr. Frederick Peterson, of New York, on The Old and the New Phrenology.

Proceedings of Societies.

AMERICAN NEUROLOGICAL ASSOCIATION.

Eighteenth Annual Meeting, held in New York, June 22, 23, and 24, 1892.

The President, Dr. Charles L. Dana, of New York, in the Chair.

(Concluded from page 134.)

Some Contributions to the Muscular Sense.—Dr. G. J. Preston, of Baltimore, read a paper with this title. He thought that it might be considered definitely proved that the muscular sense, or at least one part of it, was composed of afferent impulses which were entirely independent of general sensibility. The next step that suggested itself was the starting-point of these afferent impulses. Clearly, as several observers had noted, the muscles alone (meaning sensations coming from them) could not give us the information we required as to the position of our limbs. How, for example, could we be made aware of the position of the forearm produced by contraction of the biceps if the impressions came slowly from this muscle? We might obtain in this way some general information as to the position of our limbs by means of the memory of muscular contraction and the result produced, but it was impossible to conceive that we could in this way be kept informed of the exact position of our limbs. That the muscular element was a very important factor was proved by the fact that the muscular sense of the ocular muscles informed us of the degree of convergence of the visual axes, and consequently was a most necessary element in our appreciation of the size and distance of objects. Undoubtedly the tendons, the joints and their coverings, and perhaps the bones, all aided in producing the posture sense, or rather from these proceeded nerve fibers conveying posture-sense impressions. The course of these impressions was almost certainly through the posterior columns of the spinal cord. The loss or impairment of posture sense was an almost constant symptom in sclerosis of the posterior columns. If it was admissible to draw conclusions regarding the muscular sense from the symptomatology and pathological anatomy of tabes dorsualis, it would seem that posture-sense impressions ran a continuous course in the posterior columns. At all events, we found in tabes loss of muscular sense, often with little or no involvement of cutaneous sensibility, and only the posterior columns involved. It seemed probable to the author that the fibers conveying posture-sense impressions passed into the restiform body, thence to the cerebellum, and on to the great brain. In three cases of tumor of the cerebellum, with autopsies, he had observed loss of posture sense without impairment of general sensibility. In one of the cases the loss of posture sense had been practically absolute, and the tumor was found to involve the middle lobe and the superior peduncles, pressing also on the corpora quadrigemina. In the two other cases the loss of posture sense, while not nearly so marked as in the case related, was yet decided. It remained finally to consider the probable center for posture-sense impressions, and here speculation was most rife. Following Ferrier and his school, we should place this center in the hippocampal lobe. This, however, would be assigning to it a closer relationship with general tactile sensibility than facts would seem to warrant. A far more reasonable supposition was to consider this center to be in the closest possible relationship with the motor centers. He would be inclined to place it in either the convolutions contiguous to the parietal convolutions or, what seemed still more reasonable, in one of the several distinct layers of cells which went to make up the cortex of the motor area. A summary of his deductions was as follows: 1. The posture sense was composed of afferent impulses derived from muscles, tendons, articulations and their coverings, and bones. 2. It was independent of and separable from general tactile sensibility, and possibly could be distinguished from the other members of its class—such as the pressure sense, for example. 3. The course of these impulses through the cord was almost certainly by means of the posterior columns. 4. They probably passed into the corpus restiforme and the cerebellum. 5. In all probability they passed through the anterior portion of the posterior third of the posterior limb of the internal capsule, occupying an intermediate position between the motor and the sensory fibers in this region. 6. Without positive data on either side, it would seem most probable that the center for the posture sense was located in one of the cell layers of the motor cortex.

The Extent of the Visual Area of the Cortex in Man, as deduced from a Study of Laura Bridgman's Brain.—Dr. H. H. Donaldson, of Worcester, Mass., made some remarks on this subject. Vision in Laura Bridgman's case had been lost in the left eye at twelve years of age. The right cortex was found to be thinner than the left when first examined. Compared over the posterior portion of both hemispheres, it was found that on the right side the cortex was thinner over an area which corresponded pretty nearly to that described by Jones as representing the visual area as determined by the study of isolated lesions. A study of cases in which the sense organs had been lost in early life, as in animals where they had been removed experimentally, might materially aid in marking the sensory areas.

The Criminal Brain, illustrated by the Brain of a Murderer.—Dr. Donaldson read an additional paper on this subject. He said that a specimen obtained from Dr. Van Gieson had been examined with a view to determining whether it corresponded with Benedikt's notion that confluent fissures were characteristic of criminal brains. Examinations of this particular brain, that of a murderer of undoubtedly criminal characteristics, showed that it did not correspond with the type as described by Benedikt. As against the idea of this observer, Eberstaller had advanced the fact that many of Benedikt's so-called characteristics were to be found in the normal brain. Giacomini had determined by comparison that there were more confluences in normal brains than in those of criminals. If increased fissuration was a criminal characteristic, this, other things being equal, implied an increase of gray matter, and therefore low-type brains might be said to have proportionately a larger amount of gray matter. Undoubtedly the criminal brain could be picked out of a mixed lot, but only by virtue of general characteristics, and there could be no certainty that all criminal brains could be thus selected. The characteristics of degeneracy were such as were to be found about the rest of the body, and were not yet sufficiently marked to be expressed in a systematic manner.

Dr. Collins said that, from a somewhat limited experience at three or four autopsies on murderers, he was not prepared to say that there was a criminal brain, although this was often found in such fissural and gyral peculiarities and merited study and observation. In the autopsy on a murderer who had lost his life in attempting to take that of a New York financier, the speaker had found really remarkable structural changes, and whether these were the result of retrograde changes during the life of the murderer or an inherent structural peculiarity from the beginning he could not say. The fissure of Rolando was very shallow, the gray matter was thinner than normal, the ascending parietal convolution was small, and the entire left hemisphere gave an idea of changes from the normal in conformation. Further careful comparisons between the brains of the known criminal class with those of a known high order was necessary before any valuable conclusions could be drawn.

Dr. Charles K. Mills believed that there were many misconceptions on the part of those who criticised the observers that had reported aberrations and irregularities in the brains of criminals. No one believed that all criminals presented a brain anatomy that would enable them to be ranged under a special type. Criminals belonged to very different classes. A criminal type of brain could be expected in those who were the subjects of a bad heredity or a very early arrest of development. Paranoiacs, criminals, idiots, imbeciles—those generally who were victims of arrested or abortive development—would probably present brain abnormities even of a gross kind. The brain shown by Dr. Donaldson exhibited what seemed to him to be evidences of aberration, particularly in the parieto-occipital region. The subject was one, however, that could be settled only by careful and prolonged investigation. He could not believe with Professor Wilder that it was best to disregard altogether the study of the brain of the lower animals as a help to a proper comprehension of human cerebral anatomy. The study of fœtal brains was, of course, of the greatest importance, but so also was that of the brains of apes and other lower animals.

Dr. Knapp had nothing to say as to the anatomical conditions, but he wished to support Dr. Mills's views as to the distinction between criminals. It was as vague to speak of a criminal brain as it would be to speak of an insane brain, classing together indiscriminately mania, melancholia, paranoia, and general paralysis. Before we could speak definitely as to criminal brains we must study the criminal history and the condition of the criminal himself, supplemented by a careful anthropometrical examination, as well as a study of the brain.

Dr. Donaldson was glad to hear that those who had discussed the question did not consider Benedikt's view tenable. The main advance would probably be when one could say that such and such were factors of the criminal brain, and then proceed to test this with statistical records.

A Chinese Brain.—Dr. F. X. Dercum, of Philadelphia, gave the record of an examination of a Chinese brain.

The Association of Hysterical Trembling and Anorexia Nervosa.—Dr. James H. Lloyd, of Philadelphia, read a paper on this subject. He reported the case of a young woman who had been first observed at a remote farm-house in Pennsylvania. She had then been ill for two years. She was suffering with a peculiar rhythmic, constant tremor, which was, however, not paralysis agitans. The tremor occurred in waves of exacerbation and opisthotonic spasms every minute or so. The patient had hysterogenic zones, pressure over which caused the spasm. She had also the condition described by Gull as anorexia nervosa. By a mistake, a large dose of ordinary saltpeter had been given instead of sulphate of magnesium. While no harm had directly resulted from this error, the mental disturbance had been such that regurgitation of food had set in, and this had become the most pronounced complication in the case. The patient was found lying upon her side with cloths under her chin to catch the regurgitated material. She was emaciated to the last degree. This condition was followed by true hysterical retention of urine lasting sometimes for two days. Upon her removal to a private hospital the tremor had greatly subsided and the regurgitation of food had entirely stopped.

Dr. Riggs cited the case of a woman under his care believed to be suffering from hysterical tremor. The case was peculiar in that the attack came on only during the morning hours. He had been unable to find any of the stigmata commonly present. There was persistent nausea, also continuous headache. Under the usual treatment the patient had steadily improved.

Dr. Webber said that these patients did not really swallow; at least the food did not pass into the stomach. If a tube was passed into the stomach and food was made to pass down it, they did not vomit. If they were taken away from home for a time the symptoms ceased and they were able to take food.

Dr. Preston said it was necessary to distinguish between hysterical tremor and the *tremblement nerveux* of Charcot. There was an hysterical tremor due to distinct cortical inhibition—an absence of stimuli sufficiently close together to insure summation—and hence there was a series of movements which resulted in tremor. In a case of his, of hysterical anorexia with nervous tremblings at intervals, the patient had lost fifty per cent. of weight.

Dr. Mills had seen Dr. Lloyd's cases, and considered the diagnosis correct. He thought it important to determine that the tremor or abnormal movements were not purely hysterical or associated with melancholia or some organic disturbance. A diagnosis of the hysterical character of the tremor was to be made chiefly from the association of other hysterical conditions. As to the prognosis, many such patients would outlast the medical observers. A case of demoniacal trembling, with choreiform and other movements, of which he knew had lasted already thirty years and would probably persist during the patient's life.

Dr. Sachs said that as pronounced cases of hysterical anorexia with trembling were to be met with here as in Paris. The former condition was extremely frequent. In the public institutions in which these cases were seen, both among males and among females, the condition was evidently due to different causes; in some the ætiology could not be made out. He might cite one case, that of a young woman who had refused absolutely to take food, on the plea that she could not swallow. Efforts were made to administer food by force. She would keep large quantities of food in her gullet and then go into a corner of the room and eject it. When fed, she would gag and regurgitate a little, but it was not believed that she emptied the contents of the stomach entirely, and it was agreed that it was not true vomiting. The male hysterical patients were much more difficult to handle than the female. He believed that the majority of these patients did swallow, and the best proof that they were not without food lay in the fact that they increased in weight in spite of the assertion that no food was taken. As to prognosis, the hystero-epileptic regimen had been followed by brilliant results in these cases. He believed that few of these hysterical-anorexia cases would be found to resist cold water, applied under considerable pounds of pressure.

Folie a Deux, with Remarks on Similar Types of Insanity.—Dr. Charles K. Mills, of Philadelphia, presented notes of two cases of this disease. The two patients were sisters, the elder thirty-two years of age, the other less than two years younger. The father was a hard-drinking, quarrelsome man. The first patient had been deranged for from three to four years. She had complained of strange feelings as of something growing in her abdomen, of sickness at the stomach, of bloody passages, of chills, and of other unpleasant sensations. She had been troubled for a long time with strange voices. She was tormented by people, both at her work and at home, and was made to say very ridiculous things. She apparently had hallucinations of several senses. A stench of blood came up through her throat; at times she was grasped by a hand or hands. Men would appear before her. Sometimes they would get on their knees and solicit her. She was full of sexual delusions with reference to men and their designs upon her. The heads of men would appear before her at her work. When she did not see them, sometimes she would feel them or hear them; often she heard their voices talking with her after midnight, saying all sorts of filthy things.

The other patient's mental disturbance had come on a few weeks after her sister's. Apparently the delusions of the first had, to some extent, been imposed upon or communicated to the second. Besides having various physical symptoms, the second patient, who seemed to be weaker, both mentally and physically, than the other, told the most filthy stories. She said that she knew who the men were that were abusing her—knew their names. These patients had evidently become nuisances both at their home and in the neighborhood. Some of the men they had accused had been threatened by them. They appeared to believe firmly in what they said, and yet at times to appreciate that something was wrong with their heads. They eventually went quietly and without resistance to a hospital for the insane, thinking apparently that they might be able to get their troubles straightened after they got there. They presented, as was not unusual, a blending of the characteristics of the three forms of *folie à deux*—namely, of imposed insanity, simultaneous insanity, and communicated insanity. The influence of heredity was decided; the delusions were persecutory.

A Case of rapidly Fatal Motor and Sensory Paralysis, with Autopsy, showing Acute Myelitis, mainly of the Dorsal Cord.—Dr. Mills read a paper with this title. The patient, a man, thirty-seven years old, with an uncertain syphilitic history, six months before coming under observation had had a large carbuncle between the shoulders. For months he had shown some tendency to drag his feet. For two weeks he had had pain and soreness nearly in the line of the right nipple, which subsequently extended into the armpits and down the inner side of the arms. Four days before he was first seen he had severe pain across the loins. The next day he was barely able to walk, and in thirty-six hours he could not stand. Twenty-four hours later he was completely paralyzed as to motion in both lower extremities, and showed also total loss of sensation as high as the nipples. He had incontinence of urine and fæces. The knee-jerk, muscle-jerk, and cutaneous reflexes were abolished. This extreme paralysis was fully developed on May 31st, three days after the first symptom of motor loss became marked. His temperature rose rapidly to 104° and 105° F., with corresponding increase of pulse and respiration. He died on June 7th. From May 31st to June 4th his condition did not change much, except that the line of insensibility advanced a little higher and ecchymotic areas appeared on the thighs. The motor paralysis, reflexes, etc., made no improvement. On June 5th he complained of severe pain in the upper arms, coming in paroxysms. Mucus collected in the larynx, weakness of the voice came on, and the surface of the body became cold, with some delirium, and at times a marked disposition to somnolence. From the 5th he kept both the forearms flexed and rested them on his abdomen and chest, the little and ring fingers also being flexed. At the autopsy the vessels of the spinal pia were found decidedly distended with blood. On section, the periphery of the cervical cord was of good consistence, but the center was much softened. As the sections were made lower, the transverse area of the softening increased, until in the dorsal region only a shell of solid tissue surrounded a creamy mass. The softening grew less again in the lumbar region. Below the right groin there was a swelling which contained broken-down glands and pus. Other organs and parts were found to be normal. Microscopical examination showed in the dorsal region the nervous tissue almost entirely destroyed. The blood-vessels were distended and there were many scattered hæmorrhages. Hæmorrhages were also present in the pia and in some of the peripheral nerve roots. The upper part of the cervical region was very little affected, the lumbar much less than the dorsal. The case was unquestionably one of acute, rapidly spreading myelitis.

Dr. Sachs had seen several cases, after development, in which the acute myelitis led primarily to death. In Dr. Mills's case the analogy with acute tubercular myelitis suggested itself. He had seen three cases with such characteristics, in all of which the tubercle bacilli had been discovered in the broken-down cord. He thought he could assert that in cases in which there had been some chronic form of spinal-cord disease before exposure to tubercular infection the cord was very prone to break down.

Dr. Preston agreed that the case could be put down as one of hæmorrhagic myelitis producing distinct arterial sclerosis. He had seen a case of this nature apparently due to a very limited local tuberculosis of a vertebra. The vertebra was not broken down and the bone not decidedly involved. There were tuberculous nodules in the coverings of the cord at the point where the myelitis began.

A Case of Huntington's Chorea, also one of Congenital Huntington's Chorea (the First on Record).—Dr. L. C. Gray, of New York, presented a man suffering from alleged hereditary Huntington's chorea. The disease had manifested itself in the same family for many generations. The movements and progressive muscular tremors had appeared in this case when the patient reached the age of forty-five years. The man belonged to some branch of the Fairfield County (Conn.) family. The speaker did not consider the swaying and dancing movements in this case those of chorea.

Dr. Gray then showed a case in a child which he considered was one of congenital Huntington's chorea. There had been no similar trouble in other members of the child's family, and the general history was negative. The choreic movements had been noticed immediately after birth. The infant was a seven-months child. This disease showed itself generally between the ages of thirty and fifty, and this was the youngest patient known to the speaker upon record.

Dr. Lloyd thought that the so-called Huntington's chorea, which was clinically very similar to ordinary chorea, was dependent upon a different pathology. He had observed in Philadelphia a woman of eighty with senile chorea. There was always an associated mental failure in these forms of adult chorea.

Dr. Sinkler said that a Dr. Stevens, of South Carolina, had reported having under his care a family in which there had been cases of chorea for several generations. The same observer had reported two cases in young adults in whom the choreic movements had begun in infancy, before the end of the first year of age. The case before the meeting was certainly different from ordinary chorea, and had probably begun as a spinal disease. It was much more like spinal chorea as reported.

Dr. Collins reported having observed the case of a child of eleven in whom the movements, which dated from birth, were more characteristic than in Dr. Gray's case. In the patient before the meeting the lesion was probably one of the medullary areas, and the choreic movements were associated with lack of development high in these areas.

The President presented a case of hereditary chorea in a man, a native of Scotland, in whose family the disease had appeared for four or five generations. The speaker was presenting this case to show the effect of trephining. The temporary relief afforded by the operation in general paresis had suggested the probability of some such result in this case.

Dr. Gray said that autopsies would not substantiate Dr. Sinkler's views as to the spinal origin of this disease. There were only one or two cases in which spinal degeneration had been noticed in this form of secondary degeneration of the lateral columns. The lesions had been in the cerebrum, in the motor tract.

Traumatic Nervous Affections.—Dr. Philip C. Knapp, of Boston, read a paper on this subject. The writer held that there were various distinct affections of the nervous system due to injury, and that no one term, such as traumatic neurosis, could be applicable to all. The paper, he said, was an attempt at classification based on ninety cases, in half of which there had been no question of litigation. Pain in the back was present in fifty-six cases. In nine the trouble in the back was the chief disturbance. In the rest it was only a complication. Traumatic lumbago was not the only cause of pain in the back; true neuralgia was occasionally found and the condition of spinal irritation was common. Five cases were due to direct injury to the cord, producing paraplegia. In four cases there were symptoms of insidious onset referable to the cord, paresis, vesical disturbances, and a slight spastic condition. Here it was thought that the changes were chiefly in the lateral columns. Systemic diseases, such as tabes or spinal muscular atrophy, were very rare. Thirteen cases were regarded as of more distinctly cerebral origin. Here the injury had been to the head, and the prominent symptoms were headache, vertigo, and loss of mental power. Other symptoms sometimes indicated a focal lesion, hæmorrhage, fracture, or meningitis. Twelve case were believed to have an organic basis, a diffuse sclerosis of the cerebral nervous system. Four of these had terminated fatally. Four others were thought to belong to this class, but they were classed as doubtful. The symptoms were pain in the head and back, loss of mental power, insomnia, muscular weakness, anæsthesia (usually of general distribution and most marked in the legs), tremor, disturbances of micturition, and palpitation. In these cases the psychical element had little to do in the causation. In the functional conditions the psychical element was much more important. Twenty-six cases were classed as neurasthenia. Part of these, where the psychical factor was prominent, showed much emotional bad dreams, excitability, and emotional instability. In all, "spinal irritation," headache, insomnia, digestive disturbances, incapacity for protracted physical and mental effort, nervousness, hypochondria, melancholia, morning fatigue, etc., were prominent symptoms. A rapid pulse and an exaggerated knee-jerk were considered of some importance. Seventeen cases were classified as hysteria, and presented some of the symptoms, notably hemianæsthesia, on which the French laid so much stress. Most of them also presented symptoms of neurasthenia. Pure hysteria was very rare. Limitation of the visual field was common in hysteria, but was rare in other affections. Both this symptom and hemianæsthesia were of importance, but they were met with only in a small percentage of the cases. The litigation cases presented no symptoms differing from those seen in the non-litigation cases which could be considered litigation symptoms. Successful simulation was believed to be extremely rare. The prognosis depended upon the form of disease.

Dr. J. J Putnam thought that neurologists had a peculiar responsibility in regard to this subject, and it was his earnest desire that the question of prognosis should be tested in every way, and as large a series of cases as possible should be accumulated and classified as to age, sex, and temperament. Much more light was needed before a judgment that was fair could be given. No expert had any excuse for not knowing practically all that had been discovered on the subject. There had been a serious accident at Roslindale, and the speaker had had special opportunities of observing the worst cases among those injured. Only a very small number of these would admit that they had entirely recovered. These cases were, of course, of different kinds, but they might only be spoken of together as concerned prognosis. He had tried to account for the peculiar condition into which these patients fell. It seemed not so much the predisposition to nervous disease or the severity of the injury, as that there existed a class in the community who had been trained in self-control, and these people were less susceptible to injury and did not suffer so much. In the speaker's experience, treatment was effective after a length of time in removing certain factors in the cases. He believed simulation to be of rare occurrence. Hypnotism, while likely to do harm if indiscreetly employed, was one of the edge-tools the proper use of which would give good results.

Dr. Webber said there was a class of patients that rarely entirely recovered, the neurasthenic symptoms being hardest to remove. He cited cases.

Dr. Dercum thought that sufficient attention had not been paid to the existence of a certain group of motor symptoms in some of these cases. There was not only weakness amounting to absolute paralysis, but a condition of motor erethism, fibrillary tremors, spasm of the back muscles, and so forth.

The Treatment of Syphilitic Nervous Affections.—Dr. E. C. Spitzka, of New York, made a few general remarks on this subject. The speaker was surprised to find that authorities on myelitis and other organic spinal disorders had not recognized the clinical difference between gummatous and acute vascular syphilitic affections of the spinal cord on the one hand and tabes dorsualis on the other. There were two special diseases of the nervous centers which had more or less connection with syphilis. For instance, in locomotor ataxia, we knew how frequently a history of syphilis was in the ætiology of this disease; but the connection was not of the same kind as was found between the secondary and primary lesions of syphilis. The speaker also had no difficulty in recognizing the existence of dementia due to syphilis which was not true paretic dementia. Empirically, he stated that the more rapidly a central nervous syphilitic lesion was developed the more rapidly fatal or radically curable it was. These cases exhibited the extremes as to rapid development, shortness of duration, and intensity of manifestation.

The Toxic Origin of Insanity.—Dr. Theodore H. Kellogg, of Flushing, N. Y., read a paper with this title. Twenty-five years ago comparatively few cases of insanity were recognized to be of toxic origin. Modern research and clinical observation on the part of many specialists in nervous and mental disorders had established the fact that a considerable percentage of all mental disorders could be said to have a toxic ætiology. Whenever a poison entered the human system, and through its presence directly or indirectly caused prolonged derangement of the mental functions, it was but reasonable to call the insanity toxic, and to regard the deleterious substance as the exciting cause of the disease. It was true of this exciting cause, as of all others, that it would act only on persons having a native instability of nervous center. The toxic agent might be vegetable, animal, or mineral. It might be generated as an organic virus in the bodies of others, or it might originate through metabolic tissue changes in the patient himself, as in the self-intoxications. The poisonous substance might gain access to the system through the alimentary canal, by the respiratory tract, or through the cutaneous surface, and it might act directly on the cerebro-spinal centers, on the sympathetic nervous system, or through pathological changes which it produced in the blood or in the internal organs. Time would not permit a description of the many ways in which the poisonous substances actually found their way into the system. The speaker simply referred to the commoner means of entrance, as in adulterated food, impure water supply, and the numberless exposures to noxious agents through special occupations. It was of interest to note that the action of these agents was often most persistent and continuous long after the exposure, and that the variation in the effects of the same agent in different individuals was very great. This individual idiosyncrasy was well illustrated in the instance of alcohol, which by some was borne in enormous quantities, while in others the smallest amount would derange mental action. Most of the toxic agents might start a long train of psychic disturbances, and either set of symptoms might predominate or they might alternate with the other. After dwelling briefly upon the various toxic agents most frequently met with, the speaker touched upon gout and lithæmia and their relation to psychic disturbances. Finally, he referred to the self-intoxicants which might cause mental disorders—the putrefactive alkaloids supposed to be formed by the action of bacteria on organic matter, known as ptomaines, and those basic substances which resulted from metabolic changes in the bodily tissues and were called leucomaines. The main point was that these toxic substances might cause mental disease. It had long been known to physiologists that certain excretions contained substances poisonous to the organisms excreting them, and it was not a matter of surprise that autogenous poisons should be found in the excretions of the human body. The albumoses were among the most powerful autogenous poisons, and they had been found in the urine in cases of insanity. A number of writers might be cited to sustain the view that autogenous poisons entered the circulation and acted directly on the central nervous centers with sufficient toxic force to produce mental disorders. It was to be hoped that the day was not far distant when these poisonous alkaloids would be isolated and studied as to their physiological effects and as to their antidotes, so that at the same time that mental derangement from a special toxic agent was diagnosticated the antidotal remedy for the disease might be suggested. The speaker's object in presenting the paper was not so much to offer original material as to call for an expression of skilled opinion on this important subject.

Dr. Tomlinson said that he had been very much interested in what Dr. Kellog had said, and heartily agreed with him as to the influence of toxic causes in the production of insanity. He wanted, however, to call attention to one point not mentioned by the writer of the paper, and that was that a toxic influence could not produce insanity of itself; there must have been a pre-existing instability of the nervous organization. The instability might be hereditary or acquired. The heredity did not necessarily have to be of insanity in parents or near relatives, but the instability might be due to any constitutional condition in the parents acting upon the child, or it might be acquired by the individual as the result of disease or accident in early life. Besides, he looked upon insanity resulting from the misuse of narcotics and alcohol as a manifestation of defective nervous organization exaggerated by the toxic influence these substances had upon the organism. In self-infection the same conditions must necessarily exist, else why did not self-infection oftener cause insanity?

Dr. Bannister said that he perhaps had not fully apprehended Dr. Tomlinson's definition, but he had understood him to say that all delusions were due to prior hallucinations. It seemed to him that the delusions of the insane were largely due to the characteristic self-feelings of the insane, and that these might be started by an idea, a wish, or a suspicion without anything in the nature of a veritable hallucination having preceded them.

A Study of the Sensory and Sensory-motor Disturbances associated with Insanity, from a Biological and Physiological Standpoint.—Dr. H. A. Tomlinson read a paper on this subject. To study understandingly the nature of sensory and motor disturbance in insanity, it became necessary to erect a pathological framework into which the various manifestations could be fitted more or less accurately; and, as the absence of definite lesions in most cases left us no tangible pathological entity upon which to base our deductions, it became necessary to formulate a hypothesis to explain the functional disturbance which originated and accompanied the perverted and excessive sensory and motor activity in these cases. This apparent absence of definite anatomical change the author believed to be inherent in the conditions which gave rise to insanity, in the fact that the majority of cases of insanity, though furnishing widely different clinical pictures during the earlier manifestations of disease, existed in terminal dementia for a sufficient length of time before death to obscure any definite pre-existing lesion. Each nervous cell was endowed with a definite amount of energy, or, in physiological terms, a limited amount of irritability and capacity for reconstitution. In a normal nervous system this potentiality would be equal in all its parts; but if, as was usually the case, the individual had some imperfection of development, some parts of the mechanism would have a lesser potentiality than others, and would therefore be relatively weaker and in a condition to succumb to a smaller strain. On account of the dual function of the brain in the control of somatic and mental life, a hereditary weakness of that part of the nervous system controlling somatic activities would result in a relatively lower potentiality in the nerve cells involved. The converse of this would obtain if the lesser potentiality involved that part of the brain concerned in mental function. Again, in the progress of development, the environment and experiences of the individual, governed by the laws of organic development, would further affect the potentiality of the nerve cell, both generally and relatively; so that all activities would be equally potent. In others there would be loss of some potentiality, with a consequent lessened capacity for reconstitution. Taking, then, an individual who, from hereditary or acquired causes, had a relatively imperfect nervous structure, we should expect to find, as we did, that at times of special strain, such as the advent of puberty, the exigencies of social life, or the climacteric, he would display some signs of disturbance of the normal definiteness and uniformity of the activities of the nervous mechanism. All the sensory and motor symptoms produced permanently by pressure or gross lesion of the brain and cord were produced temporarily by cell irritation or exhaustion. By their gradual evolution they showed the transition from the complex and heterogeneous to the simple and homogeneous, as in the more or less perfectly co-ordinated motor expression of hysteria, through the various violent motor discharges occurring in mania, to the automatic associated movements present in dementia; or the tremor and ataxia of maniacal exhaustion, through the gradually increasing inco-ordination and paresis of alcoholic or syphilitic degeneration, to the completer motor abeyance seen in the latter stages of these diseases and in general paralysis. If the hypothesis was tenable, the deductions followed that the cerebral cortex was the originator of all the activities of the organism. Those manifested automatically by the spinal centers, which we found in the reflex mechanism, were the result of the division of labor caused by evolution, and represented the development from the simple and lowly organized to the complex and highly organized. These activities, as they became organized, also became more and more uniform and persistent, until, without the intervention of active consciousness, they responded definitely to external impressions, leaving to the active consciousness the cognition, recognition, and relation of the constantly recurring new external impressions. It followed that any breach in the integrity of the cortical function would produce disturbance of the uniformity and definiteness of its activities, while the reflex mechanism, subject to the same source of disturbance, would react irregularly, giving rise to centrifugally excited activities without correspondence to external stimuli.

Phthisis in its Relation to Insanity.—Dr. Thomas J. Mays, of Philadelphia, read a paper with this title. All observers, so far as the author was aware, were agreed in the opinion that insanity was a precursor of the phthisical affection among the insane. This explained why, as Clouston had remarked, insanity was not more frequently found in hospitals for pulmonary consumption. Not only was phthisis more common among the insane than it was among the general population, but facts showed that this disease had a predilection for certain forms of insanity. Thus, it was more likely to occur in the depressed than in the exalted types of insanity. Clouston had said that this was especially true of melancholia when combined with the monomania of suspicion, and that, sooner or later, nearly all these patients died of pulmonary phthisis. The author's own observation had led him to believe that general paralysis or paretic dementia was not infrequently associated with phthisis. The most superficial examination of mortality statistics made it clear that the human constitution was more vulnerable to phthisis at certain periods of life than at others, although it was true that those who inherited the disease died earlier than those who acquired it. This was true whether the disease affected the lungs, the brain, the bones, or any other portion of the body. As to the influence of heredity in the causation of pulmonary consumption and insanity, it had been recognized since the days of Moreau that the neurotic tendency bred pulmonary consumption in the offspring. Although asthma was a well-recognized disease, its life history had not been investigated with the thoroughness that its importance demanded. This was particularly true with regard to the tendency through which it produced death. The author thought that the facts tended to demonstrate that asthma was closely associated with consumption on the one hand, and on the other that asthma was closely related to insanity. Of all the nervous diseases, none was more frequently associated with pulmonary consumption than idiocy. Indeed, this intimacy was so strongly maintained that one was tempted to be skeptical until the statistics on the subject were fully examined. An interpretation of such data was that pulmonary phthisis and insanity certainly belonged to the same family group of diseases. Notwithstanding the great advance in the modern study of the neuroses, the pathologic relationship between the lungs and their nerve supply had been practically ignored. The lungs were innervated by the largest and most important nerves in the body; yet, strange to say, nearly all the diseases incidental to these organs were at present attributed to the influence of irritants and excitants introduced from without, and the possibility that the fault might reside in the nerves did not even receive serious consideration. The foregoing facts, figure, and inductions established, the speaker thought, the truth of the proposition that the link that bound pulmonary phthisis to insanity and to other neuroses was a disease of the vagi. This connection furnished a key to the problem of why pulmonary phthisis, a developmental disease, should occur in organs that underwent no development at the time of the greatest prevalence of the disease. It also showed why asthma should naturally be transformed into pulmonary phthisis; it furnished the reason that this disease was at least three times as common among the insane as among the sane, and why it was about eight or ten times as prevalent among families burdened with either idiocy or hysteria in some of their offspring as in those not so burdened. Indeed, this was what the theory predicted and demanded. It did even more than this. It explained why idiots died of pulmonary phthisis ten years earlier than healthy persons. This was accounted for by the fact that a depraved brain and nervous system, such as obtained among this class of unfortunates, offered less resistance to the disease than a healthy brain and nervous system. It offered at least a partial solution to the question of why pulmonary phthisis was more prone to show itself among the insane than insanity was to show itself among the phthisical. Insanity was an affection of the highest nerve centers, and pulmonary phthisis, if this was granted, was an affection of the respiratory, and hence of the lower, centers. Finally, in genesis and in nature, pulmonary phthisis was so closely related to insanity and to other neuroses that it might be regarded as one of the branches of the family tree to which they belonged.

A Case of Akinesia Algera.—Dr. J. J. Putnam, of Boston, described the patients suffering with this condition as experiencing severe pain during or after use of the muscles. Patients were all neurasthenic. He had a case many years ago for which he had always desired to find some category and to report when he found such category. He had supposed the symptoms were an exaggeration of those common to nervous patients. The patient referred to was, when seen by the author, a middle-aged man, and his trouble had existed since childhood, gradually increasing in severity. He belonged to a family of nervous invalids. The symptom to which the author wished to call attention was excessive pain immediately following the use of the muscles. The man could not walk a third of a mile without pain coming on upon the cessation of exertion. This result was invariable. The pain was situated mainly in the legs, but if the arms were used he would suffer pain in them. There was no sign of any atrophic changes. The man was well formed and had a delicate skin, and there was no other symptom present. The pain was diffused throughout the muscles of the thigh and below the knee. There was no tenderness.

Cephalic Tetanus.—Under this title Dr. Putnam described a condition which he said was rarely observed in this country. The patient, after having five teeth filled, had been seized with stiffness of one side of the face and neck. This was followed by spasms so severe that the teeth were ground together. The spasm was continuous. The temperature was 101° F. After some six or eight weeks the symptoms had passed away, but, as they abated, the opposite side had become involved, but in a less degree. A surgeon who had seen the case thought it was not tetanus, but there was really no reason why the parasite might not have been introduced during the filling of the teeth.

New Inventions, etc.

ROSER'S SOUND AND TRENDELENBURG'S CATHETER-SOUND.

By Willy Meyer, M. D.,

PROFESSOR OF SURGERY IN THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL, ATTENDING SURGEON TO THE GERMAN AND NEW YORK SKIN AND CANCER HOSPITALS.

For the last ten years I have been using the above-mentioned instruments to my greatest satisfaction, and have been surprised to see that they were nearly unknown in this country and not at all in use. Being convinced that many patients could be benefited by their application, I presented Roser's sound and Trendelenburg's catheter-sound at the meeting of the Section in Genito-urinary Surgery of the New York Academy of Medicine on May 12, 1892. I also induced Messrs. Tiemann & Co. to manufacture them on a large scale, adding a few modifications which, according to my experience, will make the instruments more handy, more practicable, and more aseptic.

1. *Roser's Sound.*—As seen in the accompanying cut (Fig. 1), its striking features are the short beak and the beautiful curve, which glides over the floor of the urethra with surprising ease. In cases of stricture which are slowly dilated, the latter works admirably. The bulb at the end will prove, in extracting the instrument, how many strictures have been passed and where they are located.

In the first attempts at sounding from the external meatus after external urethrotomy, I have often succeeded at once with this instrument where Otis's sound, carefully and very gently guided, repeatedly failed to enter the posterior urethra.

I have had these sounds made from No. 10 to No. 40 French. They are entirely of metal (nickel-plated) and in one piece. The length of the handle (*a*, *b*) is three inches and three quarters; the length of the sound (*b*, *c*) is nine inches.

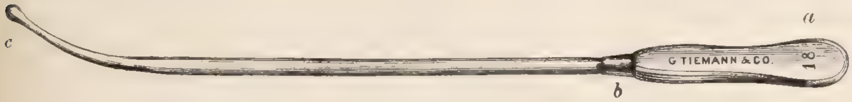

FIG. 1.

2. *Trendelenburg's Catheter-sound.*—The same instrument perforated (Fig. 2). There are two eyes at the junction of the beak and the shaft—one on either side. They can be occluded by a stylet (*s*), which is beveled at its end. The tip of the beak is filled with lead. A metal tube corresponding to the lumen of the internal canal is carried beyond the end of the handle, an inch long, to slip on a piece of rubber tubing, when we use this instrument for washing the bladder. Its end is expanded, and there is a small groove near it (*g*). It receives the silk thread which ties the rubber tube. The stylet has a small round knob at its upper end (*h*) for easier handling. The whole instrument is nickel-plated and can be boiled. I have increased the length of the shaft of this perforated sound by an inch and a half (the entire length from *b* to *c* is now ten inches and a half), and called it the prostatic catheter-sound. To simplify this armamentarium, all catheter-sounds are made of this latter length. So far, Nos. 14 to 26 (even numbers) French are ready for sale. Of course they can be made of any desired caliber.

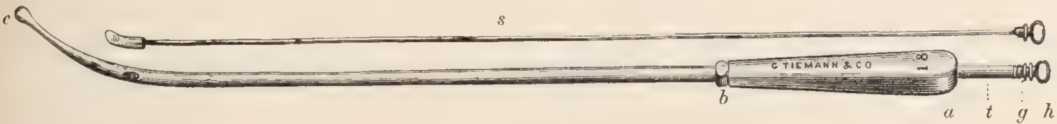

FIG. 2.

The prostatic catheter-sound has proved in my hands of great advantage in the following troubles: 1. Cases of stricture, with and without false passages, to prove that the beak has really entered the bladder. 2. Cases of stricture with vesical catarrh, when the bladder has needed washing and a soft rubber conical catheter (French) did not pass so well or would not pass at all. Its use in such cases also does away with the necessity of introducing a second perforated instrument for the purpose of washing after the sound has stretched the stricture. 3. Before all, cases of retention of urine due to hypertrophy of the prostate, more so if the latter bleeds easily. Here the use of the prostatic catheter-sound is nearly indispensable. In many instances it certainly is the only instrument which, when applied, is crowned by immediate success; for it passes the prostatic urethra as a solid sound and is converted into a channeled instrument only when the beak is in the fluid. Thus its eyes can never be occluded by a blood-clot. It is in most of these cases by far preferable to Thompson's prostatic catheter with the large curve. Its introduction is also less painful.

I am sure the usefulness of these two instruments will be generally appreciated. As I have never seen them in the hands of other surgeons here, and as both instruments were entirely unknown to Messrs. Tiemann & Co., as well as their employees (they had never seen or heard of them), I trust I have herewith recommended something that is not already known to every surgeon.

Miscellany.

The Development of the Work of the British Medical Association and of British Medicine and Surgery since the last Nottingham Meeting of the British Medical Association was the subject of the president's address, delivered at the sixteenth annual meeting, by Joseph White, F. R. C. S. Edin., consulting surgeon to the Nottingham General Hospital. We are indebted to the *British Medical Journal* for advance proofs of the address, which was as follows:

My personal duty to-night is a very pleasant and a very grateful one It is to express to you my sense of the honor you have conferred upon me in asking me to preside over this great meeting of this great association. Though attended with an almost overwhelming sense of its responsibility (in which, however, I know that I shall receive your kind indulgence), I feel that no greater honor, or one more acceptable, could be conferred upon a medical man than such a request at the hands of his professional brethren; and I do indeed thank you most cordially for it. But my still more grateful office is to offer to you, in the name of the Midland Branch of the association, in the name of the town of Nottingham, and in my own, a most hearty welcome to this our place of meeting, and to hope that the next few days may be spent pleasantly and profitably among us.

It has, I believe, been a time-honored custom, and one which I think we do well to follow, that your president should lay before you some brief reference to the place in which you meet, but in this respect I will not detain you long.

Nottingham, I need not say, is an old town, and for a manufacturing town I think you will find it fairly clean (I hope I may say very clean), in some parts rather picturesque, not overburdened with smoke, and not an unhealthy one.

Geologically the town is most favorably placed, especially as regards its salubrity and those points which are of main interest to such an association as ours. The eastern and southeastern borders of the county, as we leave the neighboring counties of Lincoln and Leicester, are principally occupied by the lias; but, as we approach the town, the valley of the Trent and the uplands to the west of it are for the most part composed of the new red sandstone rock, and this sandstone rock is succeeded by the newer magnesian or conglomerate limestone, which crops out a short distance to the north of Nottingham. To the west of the magnesian limestone occurs the great coal-field of the district—a portion of that immense tract of coal which extends over so large a part of Derbyshire and the south of Yorkshire, and of which the southeastern angle comes close to the town of Nottingham. The great rock of the southern portion of the county (the new red sandstone) is fine-grained and of a soft texture, and is therefore too perishable for architectural purposes; but from its porous character, and consequent freedom from moisture, it forms one of the most desirable substrata on which a town could be built. From its softness it is easily excavated, and in the neighborhood of the town there still exist many remains of ancient and extensive cuttings; and, in illustration of its firmness and its dryness, I may refer to the condition of the numerous underground passages which underlie the town in various directions and which have existed from time immemorial. Its cliffs or sections also have a remarkably uniform appearance, and from their color tend in a considerable degree to give a warm and agreeable effect to the surrounding scenery, and partake of that pleasantly varying character of hill and dale which is so frequently found in some of the lower members of the triassic group.

It is on a portion of this same sandstone rock, and in a situation above others most desirable, that Nottingham stands. The surface of the surrounding country also is generally undulating, and a range of hills of moderate elevation extends in a southerly direction, from the borders of Yorkshire, through the old forest of Sherwood, terminating about half a mile from the north bank of the Trent in a boldly elevated rock; and on the southern and western slopes of this rock the town has been built. Placed in the center of England, enjoying the many advantages of a southerly aspect, sheltered on the north and northeast by the hills of the forest and of Mapperley, it is seldom that we find in any county so favorable a situation for a large and important town.

The natural facilities for drainage are uncommonly good, the greater part of the town standing on an inclined plane, which rises nearly two hundred feet in little more than a mile, and falling directly toward the valley of the Trent. Nottingham is sewered and drained on the "single" system—that is, there is no considerable separation of surface water from sewage; and, by the very favorable incline of surface which I have mentioned, the drainage of the more elevated portion of the town is carried by simple gravitation through numerous tributary sewers to a main trunk sewer, which runs on the lowest level on the north bank of the river. Into this main sewer the drainage from the lower portion of the town is pumped, and the combined drainage is conveyed to a sewage farm of about a thousand acres in extent at Burton Joyce, about six miles to the southeast of the borough.

The water supply, which, with the supply of gas, is under the control of the corporation, is of good quality and abundant. It is chiefly obtained from deep wells sunk in the new red sandstone rock, which, from its porous character and from its almost perfect freedom from metallic contamination, forms an excellent natural filter. From these sources the water is pumped into reservoirs at a considerable elevation, and from which a constant supply is kept up night and day, even in the highest parts of the town.

I have said that Nottingham is an old town; and so it is, for its history extends back for more than a thousand years. But I must stand corrected, inasmuch as within the last fifty years the greater portion of that which you now see has come into existence, and in that time it has more than quintupled its area, and by more than three times multiplied its population. So recently as 1846 the inhabited area of the old town was but 280 acres, with a population of between 55,000 and 56,000, but it was then peculiarly circumstanced. It was surrounded by a belt of commonable land, which by the special condition of its tenure could not be built upon, and the consequences (especially in the poorer districts of the town) were natural.

A considerable number of good houses, most of which have since been converted into places of business, remained—and many of these had a fair amount of garden ground attached to them—but for many years the impossibility of obtaining land for building in the immediate neighborhood had caused compression within the narrowest limits in which such a population could be contained. As the number of inhabitants increased, every available spot was occupied, building and interbuilding were carried to the utmost extent practicable, and at a time when Nottingham, through manufacturing prosperity, would have expanded into the surrounding open country, the impossibility of obtaining land had forced the speculators in building into the most mischievous contrivances for heaping houses upon each other, so as to amass the greatest number of dwellings upon the narrowest space. It was not surprising, therefore, that masses of houses of the most ill-constructed and unhealthy kind should at last have occupied almost every part of the poorer districts. The population still increased, a season of commercial prosperity was succeeded by a long period of extreme depression, and families which had occupied the smaller dwellings were compelled to live in single rooms—and numerous families thus frequently occupying the same house, the undue crowding of buildings was followed by a still greater crowding of individuals—means of cleanliness were placed beyond their reach, and the result was speedily manifested in the neglected abodes of poverty and disease which in the early part of this century produced so great an amount of mortality in most of the crowded districts of Nottingham.

But at the period I have alluded to (about the years 1846 and 1847) acts of Parliament were obtained for the inclosure of that belt of commonable land which then surrounded and compressed the town, and the effect was immediate and remarkable. An area of nearly two thousand acres was at once available for the purposes of building, and houses, many of a very superior class, were soon in course of erection; and many miles of new roads were speedily constructed. An arboretum and other recreation grounds, to the extent of one hundred and forty-four acres, were reserved, and have been appropriated to the use of the inhabitants in the most advantageous situations, and these have been supplemented by planted walks of considerable extent; and there has recently been constructed a boulevard road of more than three miles and a quarter in length and of a uniform width of sixty feet, which surrounds the greater portion of the town. A large unhealthy area in the center of the town has been destroyed, and is now being prepared for buildings of a superior class, and it is expected that the demolition of other similar unhealthy areas will follow.

By successive acts of Parliament, powers have been obtained by which all new buildings are subjected to official supervision and control, and their sanitary requirements enforced, and compulsory notification of cases of infectious disease has for some years been adopted, with little or no difficulty.

Under the direction of a careful and painstaking health committee of the Town Council, and by the assistance and advice of most excellent medical officers of health, the sanitary condition of the town has been kept at a state of high efficiency, and on July 11, 1891, there was opened at Bagthorpe, within the limits of the borough, a new hospital for infectious diseases provided with every modern arrangement and appliance.

These efforts at improved sanitation have not been without their effects. In 1850, when the town first began to expand, its death-rate was nearly 28 per 1,000, and the mean age at death was for the whole population 23·2 years; and, as an illustration of the effects of overcrowding and its accompanying insanitary conditions, the mean age at death in some of the most densely populated districts was but 18·8, while in the more open parts the average duration of life was nearly thirty years. From that time the death-rate has steadily diminished; and while for the five years ending 1860 the average mortality was 27·2 per 1,000, for the five years ending 1890 the average mortality has been but 17·9, being the third lowest of the twenty-seven largest towns in England.

It was during the early period of this development of the new town that we had the pleasure, thirty-five years ago, of receiving the members of the British Medical Association in Nottingham; and as I then had the honor of acting as its secretary—and thus experienced some of the anxieties and difficulties, as well as many of the pleasures and advantages, of that meeting—one's mind naturally reverts to the incidents of the time, and mentally compares the position of the association then and now.

Our meeting in 1857 was a very small one as compared with the magnitude of the present congress. I think we then mustered some eighty or ninety members, but I have often looked back to it with interest, for it formed, as it were, a link of connection between the present and the past. We were a small party, but it was a representative one, for we were not only favored with the presence of the founder of the association (Sir Charles Hastings), but we had with us several of that small band of earnest men who, in the summer days of 1832, met in the Board Room of the Worcester Infirmary to inaugurate as the Provincial Medical and Surgical Association that body which was in a few years to develop to such magnitude and power as to become the greatest professional society in the world.

It had long been felt by many of the leading physicians and surgeons of our provincial hospitals that with the continually advancing state of medical science it was of the utmost importance for the general good that an effort should be made to collect and organize the vast amount of knowledge and experience which those institutions were continually pouring forth; and it was felt that by a freer and wider intercourse among its members (an intercourse which the then increasing facilities of railway and postal communication were daily opening out) a great and lasting benefit might accrue to the profession of medicine, and through that profession to the people generally.

I need not say here that it was to the assiduous zeal and labor and to the enlightened and enthusiastic efforts of Sir Charles Hastings that we were indebted for the conception and accomplishment of an association having those ends in view, and whose successful development is evidenced by our meetings this week.

Allow me for a moment to remind you what were its original objects and aspirations. Briefly told, they were these: The collection of important medical and surgical knowledge arising from public and private practice in the great provincial centers and in rural districts; increase of knowledge of the medical topography of England, in its widest sense, and which could best be collected by those resident on the spot; investigations of the modifications of endemic and epidemic diseases in different situations and at various periods, so as to trace their connection with peculiarities of soil and climate, or with the localities, habits, and occupations of the people; and, perhaps most important of all, the maintenance of the honor and dignity of the profession generally by promoting friendly intercourse and free communication among its members, and by establishing between them that harmony and good feeling which ought ever to characterize a liberal profession. From the time of its foundation these objects have been faithfully carried out, and I might refer to the work done at its annual meetings and at the meetings of its branches, to the volumes of its *Transactions* and to the valuable essays and reports which those volumes contained, to the invaluable and exhaustive retrospective addresses on the advances in medicine and surgery which were given year after year by their appointed readers, and to the very important contributions to the medical topography of various parts of England—a subject on which so little had before been done—as evidence of the zeal for professional scientific work which had actuated its members during the quarter of a century of its existence before our last meeting here.

But if we compare its work at the time of the last Nottingham meeting with its work now, the contrast is indeed a striking one. A year or two before we last met here it was felt that the important influence of the association ought not to be longer confined to its narrow provincial limits. After much consideration and discussion its name was changed. It became the British Medical Association, and with its change of name came its change of action. The next year's meeting was held in Edinburgh, under the presidency of the venerable Professor Allison; and the meeting of 1862 was held in London under the presidency of Sir George Burrows. It was no longer provincial, but from that time it rapidly extended its influence, not only throughout the British Isles, but gradually throughout the colonies and dependencies of Greater Britain.

In 1867, at its first Irish meeting in Dublin, its work had so increased as to render it necessary to divide it into sections, and in the next year at Oxford these sections had to be extended, and every year since that time these sections have increased the amount and importance of their work. At that Dublin meeting I well remember a conversation I had with its president (Professor Stokes) in the garden of Trinity College, in which, with his usual kindly enthusiasm for all professional work, he expressed the hope that in ten years the association would double its numbers. It doubled its numbers in little more than five, and year by year from that time it has gone on increasing in greater proportion.

When we last met here our number of members (and this represented a quarter of a century of successful work) was 2,065; now we number more than 14,000. Then the whole of our meetings were held in one small room on the low pavement known as the Assembly Room; now we require the whole of the magnificent suite of rooms which the authorities of the town and the Council of the University College have most kindly and liberally placed at our disposal—and even these are not large enough for our general meetings. Then our branches were confined within the limits of the southern half of Great Britain; now they extend to most of the British possessions throughout the world. In North and South America, in India and China, in Burmah, in the West Indies, and in the islands of the Mediterranean, at the Cape and in Australia, we have numerous and increasing branches, and year by year an ever-increasing number of our professional brethren are feeling the power and adding to the influence of our association. But not only has the association increased numerically and in the extension of its area, but I think you will agree with me in believing that it has increased in a still greater ratio in the character and importance of its work.

From time to time it has been found to be necessary to divide and subdivide its sections, and in each of its sections to set apart a portion of every day for the discussion of specially important subjects, and I have but to refer to the growing importance of those discussions since their first introduction at the Manchester meeting in 1877, to the eminence of the men taking part in them, and to the light which has been thrown by them on many obscure points in the practice of medicine, to show the great need for their adoption, and I am glad to say that arrangements have been made for their active continuance in each of the sections at our coming meetings.

In many other ways—by the work of its committees, by its money grants in aid of scientific research, and by the very valuable original work which has in many instances been the result, by its efforts in connection with the collective investigation of disease, and the opportunities for freer interchange of thought among its members afforded in the pages of its excellent journal—the association has rendered important and efficient aid in helping forward that great progress of British medicine and surgery which has been so strikingly manifest since our last meeting in Nottingham. I think if there is one characteristic which more than another has distinguished the progress of British medicine and surgery during the period I have mentioned, it is the marked effect for good of combined as distinguished from individual work. Allow me for a few moments to glance at the position of those sciences when we last assembled as an association here.

In general medicine, the work and writings of such men as Bright and Addison, of Latham and of Hope, of Stokes and Graves, of Watson and of Gull, and of Sir William Jenner, had done very much to foster and develop that spirit of independent inquiry and accuracy of thought which, in an ever-increasing degree, characterized the progress of curative medicine five-and-thirty years ago; while in preventive medicine, which was then coming to the front, two men stood prominently forth as the pioneers in that still greater movement of sanitary advancement which was so soon to follow.

These men were Edwin Chadwick and John Simon. The labors of Chadwick had dated from a very early period of that demand for sanitary effort which sprang up about the year 1838 or 1840, and for many years he was the prime mover in those attempts which were made to improve the health condition of the laboring classes of this country. Sir Edward Chadwick, beyond any man of his time (wrote Mr. Simon), knew what large fresh additions of human misery were accruing day by day under the then almost universal prevalence of sanitary neglect; and, by his unceasing labor and untiring zeal, he laid the basis of those sanitary reforms which have since been of such inestimable value in the saving of human life, and in the diminution of sickness and disease.

At the time of our meeting, Mr. Simon had just completed with the greatest distinction his seven years' labors as the first medical officer of health of the city of London, and was about to enter upon his more responsible position of medical adviser to the Privy Council; and he then occupied the foremost position not only as a sanitary reformer, but as the most eloquent exponent of the aims and capabilities of preventive medicine in its truly scientific aspect. Of the subsequent and still greater work of Sir John Simon I may have occasion again to speak; but he and his fellow-laborers in the same field had in a few years so raised the importance of the work of sanitation in the estimation of the profession and the public that it was, for the first time in the history of the association, made the subject of one of the special addresses at the last Nottingham meeting in 1857.

In surgery, again, we had, about the time of our last meeting, arrived at a critical period of its history. The work of the great surgeons of the first half of the present century had done very much to raise the position of English surgery to an eminence to which it had never before attained. The teaching of such men as Blizard and Abernethy (of course, I mention these only as illustrative examples), the great practical work of Cline, and the bold achievements of Sir Astley Cooper, and, a few years later, the still more brilliant operative work of Robert Liston, and, later still, of James Syme and William Ferguson, had raised it to the very foremost rank as an art; while the more philosophic views of Brodie and of Lawrence, and the still more philosophic work of Sir James Paget, had done even more to elevate it to that truer position as a science which it was rapidly achieving thirty-five years ago. Both as an art and science British surgery had attained a very high position; but, high as its position then undoubtedly was, it was but just upon the threshold of a still more important sphere of development.

A few years before our meeting in Nottingham the surgical world had been startled by the sudden intelligence from America that a method had been discovered for the total abolition of pain in operations even of the most severe kind; and in a short time the whole aspect of surgery was changed—a change which can only be fully appreciated by those who were intimately acquainted with the working of our hospitals both before and after the introduction of anæsthetics. From this time the practice of surgery entered upon a new life, and operations which previously the boldest and most skillful of surgeons dare not have undertaken now became matters of every-day performance. The instinctive dread of the infliction of pain, and the consequent endeavor in every possible way to save the time of an operation, frequently led, from motives of pure humanity, to the sacrifice of a limb, when a more delicate or more protracted and more painful operation might have saved it. The attainment of this great end was one of the earliest benefits conferred by anæsthetics, and the so-called conservative surgery of Ferguson, of Syme, and of Butcher of Dublin, led to the saving of useful limbs, and, not infrequently, to the saving of human life.

To those who were connected with the hospitals of this country at that time I need not say how the whole method of surgery has changed. It became more delicate and more defined in its procedures, and, by the absence of that haste which had previously been so great an element of success, disease was more accurately and more thoroughly removed. The increased and increasing simplicity in the modes of dressing, the comparatively painless after-treatment of operation wounds, the advantages of mechanical and physiological rest, as so philosophically shown by John Hilton, the prevention of blood loss by the method of Professor Esmarch, and the improved methods of ligature and torsion of divided arteries, did much to lessen the pain and mortality after the great operations of surgery; but perhaps the greatest achievements of modern surgery have resulted directly or indirectly from the introduction of the so-called antiseptic method, for which we are indebted to the genius and labors of Sir Joseph Lister. When I speak of antiseptic surgery, I allude to it in its widest and most general sense—not only to the complete and perhaps complicated manner in which it was introduced during the first few years of Lister's work, but through those many modifications which have been gradually introduced into its practice up to the present time—from the period when the spray and carbolic gauze were the essential elements of treatment to the so-called simple surgical cleanliness of to-day. Simple cleanliness we may call it, if we will, but it is not simple cleanliness in the ordinary acceptation of the term—not that cleanliness which is the antithesis to ordinary dirt, but that special form of rigorous and refined cleanliness which the pathologist and the chemist alone can appreciate—that prevention and removal of everything of a septic kind which can possibly invade a wound. The attainment of that purely aseptic condition which can only be accomplished by the most scrupulous and watchful care that neither by the condition or surroundings of the patient, nor by the condition of the instruments, nor by the hands of the operator or his assistants can those micro-organisms on which we have reason to believe that septicity depends come in contact with a wounded surface, or, if in contact, shall be destroyed; and no one has done so much to attain that end as Professor Lister.

By these two great achievements—by the abolition of pain by anæsthetics and by the greater safety of wound treatment since the introduction of antisepticism—the whole practice of surgery has undergone an amount of development which twenty or thirty years ago could not have been believed possible. Perhaps in no two departments has that development been more evident than in those of abdominal and brain surgery.

A few months after our last meeting in Nottingham Mr. Spencer Wells performed his first operation for ovariotomy, and from that time abdominal surgery may be said to have taken a prominent position in English surgical work. In operations upon the abdomen ovariotomy naturally took the foremost place. An operation which, up to about that time, had been attended with such a varying and doubtful amount of success, as, in the opinion of many of the most eminent surgeons of the day, to be almost precluded from the domain of legitimate surgery, has, by the labors of Sir Spencer Wells and Mr. Keith, of Mr. Lawson Tait, Mr. Knowsley Thornton, and others been raised to the position of one of the most successful of the great operations of surgery; and I think we may fairly attribute a great portion of this success to the causes I have mentioned—the introduction of anæsthetics and the gradual perfecting of the antiseptic or aseptic methods of procedure.

Other operations within the abdomen have followed upon the successful development of ovariotomy, and the removal of the kidney, of the spleen, of the uterus and its appendages, of portions of intestine, of bladder tumors, and of various kinds of tumors within the abdomen, operations upon the liver and upon the gall bladder, and, perhaps even of still greater importance, operations for otherwise necessarily fatal mechanical injuries within the cavity of the peritonæum, have within the last few years been attended with a great and ever-increasing amount of success, and with an enormous saving of human life.

Several of these subjects will be introduced for special discussion in the Surgical Section by men whose names are eminently associated with their history and development.

But, if we may be allowed to take pride in, and express our thankfulness for, the recent achievements in the surgery of the abdomen—and of the thorax too—what may we not say of the great development (may I not call it a new departure) in the surgical treatment of diseases of the brain?

Those of us who were present at the Brighton meeting in 1886 will remember the very interesting series of cases which were then brought before the Surgical Section by Mr. Victor Horsley. These were typical cases of great surgical relief—of cure, indeed—of conditions among the most distressing from which a human being can suffer—of epileptic fits of the most aggravated form (in one of the cases, if I remember rightly, there were more than three thousand fits in the course of a fortnight) depending upon localized brain disease, and cured by the operative removal of that local mischief. These two series of cases were indeed marvelous examples of an advanced surgery, which could not have been possible a few years ago. They were not only examples of a bold and successful surgery dependent on the advance which the development of anæsthesia and asepticism had wrought, but they were examples of the scientific application of those great discoveries in the localization of brain function which have been made during the last few years.

Much as had been done by the application of surgical method to injuries of the brain, it was only to those parts which were brought within actual ocular observation that surgical treatment was successful. Post-mortem observations, indeed, had constantly revealed the existence of brain lesions which might have been remedied by operation if only their precise locality could have been determined; but the brain was a hidden region, and it was reserved to the laborers in the field of localization to give the clew.

About four years after our last meeting in Nottingham it was observed by Broca that in cases of paralysis attended by loss of speech, this aphasia depended upon some lesion in a limited area of the brain surface about the third left frontal convolution, and that therefore in this limited area was the seat of the faculty of articulate language. This important revelation foreshadowed others of equal significance. Up to that time the view held by physiologists was that all parts of the cerebral cortex had the same value, and this discovery of Broca was the first step toward the localization of its function. This first step was the result of most careful clinical and pathological deduction, carried out by patient and most accurate observation of a large number of cases, and extending over a considerable period of time. The next step was taken by the aid of electrical stimulation.

During the Franco-German war in 1870, Hitzig had occasion to apply galvanism to a certain portion of the exposed brain of a wounded soldier, who then lay insensible upon the field, and he noticed that this was followed by contraction of the muscles of the eyeball. This observation, made in the excitement of the battle-field, became the basis of further researches when the war was over; and Hitzig and Fritsch, and subsequently Ferrier, discovered that when certain other limited areas of the brain surface were stimulated in a like manner, this stimulation was followed by contraction of definite groups of muscles in different parts of the body.

Year by year these investigations have been carefully pursued by these and other observers, and by none more successfully than by Mr. Victor Horsley, the present president of our Section of Pathology. Year by year our knowledge of the localization of brain function has become more extended and more and more precise, until it has resulted in those great achievements of brain surgery which, at the hands of Horsley and McEwen, and since then of many others, have been attended with such marked success. I think, gentlemen, I can scarcely quote a more distinguished example of the recent advances of surgery, carried out on lines of pure inductive reasoning, than in the present position of the surgical treatment of diseases of the brain.

And then as to the progress of medicine during that same period. The practice of medicine has become more defined, more precise, more true. Medicine has in that time entered upon a new phase—a phase marked by more exact physiological investigation, and by the reference of pathological phenomena to a physiological knowledge which is daily widening, deepening, and becoming more and more minute. A more advanced pathology has led to a more accurate diagnosis, and a more defined diagnosis has resulted in a truer knowledge of disease. Guided by the application of physical laws to the furtherance of diagnosis, and by the elaboration of methods and instruments of precision, our knowledge of disease has become more and more exact.

The increased powers of the microscope, the development of the investigations by the laryngoscope, the applications of the ophthalmoscope, not only to conditions of the eye, but, perhaps even of more importance, to conditions of the brain, the revelations of the sphygmograph and of the spectroscope; the uses of electricity and galvanism, not only for diagnostic and curative purposes, but also for the illumination and examination of hidden cavities; and the wider knowledge of physiological and pathological chemistry, have done very much to extend and to define our grasp of the phenomena of disease. But if there is one instrument of precision which has done more than any other to aid us in our efforts of diagnosis and prognosis during the time I have alluded to, it is the modern use of the clinical thermometer, an instrument which was practically unknown at the time of our last meeting in Nottingham.

By its unfailing accuracy, by its warning of the onset of acute disease, by its guide to us of favorable or unfavorable progress, by its aid in discovering the natural laws of certain diseases, and by the rapidity with which any deviation from those laws is shown, by its indication of the transition from one stage of a disease into another, and by the knowledge which it gives us of the approach of convalescence, of danger, or of death, it is one of the most valuable instruments which we possess. There has been no more valuable application of physical science to the investigation of disease since the days of Laennec.

These instruments, all of modern application, and most of them of wide employment, have added very materially to the increased and increasing definition which has characterized the practice of medicine at the present day.

But not only has medicine become more defined, more precise, and more true, it has become more wide in its scope, and not only more deep in its search into the origin and causes of diseases, but more assiduous than ever in its endeavors to prevent them.

The study of preventive medicine is nothing new; the prevention of disease, as distinguished from its cure, has been instinctively one of the main objects of the profession from its earliest history, and for many years has largely influenced and modified the practice of medicine in its widest aspect.

At the institution of this association it was one of its greatest *desiderata;* and by the suggested investigations of endemic and epidemic diseases, and their connection with the localities, habits, and occupations of the people, it was felt by our association that by a clearer knowledge of the cause and course of those diseases, and by a wider diffusion of that knowledge, very much might be done to remove that largely prevailing mass of unhealth which was each year believed to be more and more preventable.

Up to the time of the founding of this association in 1832 very little of a public kind had been done for the protection and promotion of public health. From the early part of the century there had been a gradually accumulating rise of new scientific knowledge as to the causes and preventabilities of different kinds of disease; but the value of that knowledge had never been grasped outside the profession; and until the approach of the first outbreak of cholera in 1832, the sanitary, or rather insanitary, condition of England remained much as it had done for more than half a century before. That outbreak, fearful as it was, proved a blessing to the country. It excited an alarm such as had not existed since the days of the great plague. It drew attention to the probable causes of infection. It emphasized the effect upon the poor of ill-feeding, uncleanliness, and neglect; and it pointed out the danger for districts which were overcrowded, ill-ventilated, and unclean. In fact, it roused the mind of the people in a way that the united voice of the profession had in vain tried to arouse it, to the danger to themselves and to their neighbors of living amid surroundings of the most unhealthy and contaminating kind; and from that time sanitary science gradually developed.

I have already alluded to the status of preventive medicine previous to the appointment of Mr. Simon to the position of Medical Officer to the Privy Council at the time of our last Nottingham meeting; and I have but to refer to his subsequent work in connection with that department, and to the work of his successors, Dr. Seaton and Sir G. Buchanan, as evidence of the great advances of sanitation in England since that time.

For some years after our last meeting incessant efforts were made, both by the profession and by the legislature, to diminish in every possible way the amount of preventable disease and death; but after many years' labor it was still believed that the deaths which occurred every year were fully a third more numerous than they would have been if our then existing knowledge of the chief causes of disease could have been reasonably well applied throughout the country; that of deaths, which in this sense might be called preventable, the average yearly number in England and Wales (I have been quoting from Mr. Simon's admirable reports) were about 120,000; and that of these 120,000 cases of preventable suffering, which every year ended in death, each unit represented a larger or smaller group of other cases of preventable disease not terminating in death, but often productive of the most serious and lasting ill-effect upon life and health.

Inquiries already made and reported on by skilled inspectors had laid before Parliament and the profession much valuable information collected according to the then current light of medical science with regard to the distribution and causes of destructive, though preventable, disease. But Sir John Simon was not content with inspection only, or with the application of such knowledge as we then possessed. He felt, and he pressed upon the Government, the need of new knowledge—of knowledge only to be obtained by extensive laboratory investigations of the most careful and subtle kind, and carried out by special observers of the highest scientific attainments; and it is to those investigations, made under the auspices of the Privy Council and conducted with the greatest care, that we are now so much indebted for many of the recent great advances in preventive medicine.

The elaborate investigations by Dr. Burdon Sanderson on the inoculability of tubercle, the careful series of experiments in connection with physiological and pathological chemistry by Dr. Thudichum, the important investigations as to the spread of enteric fever through milk supply by Dr. Ballard and the late Mr. Netten Radcliffe, the study by Sir George Buchanan of the conditions which determine the intensity and spread of scarlet fever, and the very laborious and complete researches on the natural history of contagia by Dr. Burdon Sanderson and Dr. Klein, may be quoted as a few examples of that most valuable original work which has been productive of so much new knowledge in connection with the prevention of disease—and these last researches were the precursors of that development of bacteriological investigation which has during the last few years added so much to our knowledge of minute pathology, and which promises in so high a degree to the still further advancement of the science of medicine.

In the twelfth and thirteenth reports of the medical officer of the Privy Council, Dr. Sanderson contributed a very important essay on the intimate pathology of contagion which tended to revolutionize our ideas as to the causes of the then known contagious or infective diseases, and to throw an entirely new light on their mode of propagation, and consequently of their prevention.

At that time the opinions of pathologists were somewhat vague. Contagia were regarded as existing mainly in the form of vapors or gases, and sewer gas was thought to be one principal cause of zymotic disease. The investigations of Professor Chauveau (of the Veterinary College of Lyons) and the researches of Dr. Sanderson showed, as regarded a series of communicable diseases in animals, that the *materies morbi*—the substance which, when introduced into the body of a susceptible animal, gave rise to the process by which it was itself produced—was neither gas nor vapor, was neither soluble nor diffusible, but consisted of particles of indefinite minuteness separable by subsidence or filtration from the liquid in which they were suspended. From experiments made in conjunction with Chauveau and subsequently by himself alone, Dr. Sanderson came to the conclusion that these infective particles were living organisms, and that their power of producing disease was due to their organic growth.

From that time the conclusions of Dr. Sanderson as to their particulate nature and mode of development have been gradually more and more confirmed by the labors of other investigators in the same field of work. By the discoveries of Pasteur and of Koch, of Wooldridge and of Hankin, of Hunter and of Sidney Martin, and of a number of others, both at home and on the Continent, new facts of intense interest and of the utmost importance in connection with the origin and treatment of disease, have year by year been brought to light, and at no time has this new knowledge been more rapidly developed than during the last twelve months.

I will not, however, trespass further upon a subject on which we are anticipating with the greatest interest thé promised address on Friday afternoon by Dr. Woodhead, whose labor for many years has been devoted to the work. In no other branch of science has greater advance been recently made than in this; at no other time have a greater number of active and vigorous minds been engaged in original reseach, and never before has a more promising light dawned upon the future of medicine.

I have been led to these observations, gentlemen, by the strong feeling which I can not help entertaining that in our own association there exists an immense power for good in the direction of the combined work which I have mentioned; in fact, it would be difficult to conceive a greater power, or one more capable.

The special organization of our association, with its branches extending over nearly every part of the world, with almost every climate as its field of work, and every variety of men for its observation and its study, with its thousands of members all engaged in the same pursuits, all animated by the same aims and desires for the same kind of knowledge, and all having opportunity of meeting in annual congress for the communication and discussion of its results, we have indeed unequaled opportunity for developing in the highest possible way the fruits of that combined work on which I believe the future of medicine so much depends. It is to such combined work, and to such mutual interest, that our meetings of this week call us, and we can not doubt the result. But we meet not only for work but for pleasure, for the pleasure of renewing old friendships, and for the pleasure of making new ones; for the pleasure of imparting knowledge, and for the pleasure of receiving it; for that instinctive pleasure which arises from the first meeting of men whose work we know and whose labors we have long appreciated, but whose personal influence we have never before felt. These advantages flow from all meetings of scientific men, whose feelings and whose interests have so much in common, yet whose life and whose labors lie so wide apart; but I believe that by no class of men is there felt more real community of interest, or more true sympathy in each other's work, than that which is evidenced at such meetings as this, of members of the profession of medicine.

The American Dermatological Association will hold its sixteenth annual meeting at New London, Conn., on September 13th, 14th, and 15th, under the presidency of Dr. E. B. Bronson, of New York. Besides the president's address, the programme gives the following titles: Iodine and Carbolic Acid in the Treatment of Skin Diseases, by Dr. C. W. Cutler; Additional Note on the Treatment of Erysipelas, based upon a Second Series of Fifty Cases, by Dr. C. W. Allen; A Suggestion for Operative Procedure on Erectile Nævi over Fontanelles, etc., by Dr. S. Sherwell; How should Dermatology be taught? by Dr. G. H. Fox; A somewhat Unusual Case of Lupous Ulceration of the Nose, by Dr. H. W. Stelwagon; Lupus Vulgaris following Exposure to Tuberculous Sputa, by Dr. W. T. Corlett; Notes on the Treatment of Lupus Erythematosus, by Dr. J. Zeisler; Discussion on alopecia areata (Are there two forms of alopecia areata, one parasitic and one neuropathic? Is there sufficient evidence to prove the contagious nature of the disease? Does arsenic or any other internal remedy influence the course of the disease? What is the comparative value of carbolic acid and of other topical remedies? Will epilation of the margin of the patch prevent its spread? What circumstances influence the prognosis of the disease?); Alopecia Præmatura; its most frequent Cause, by Dr. G. T. Elliot; Cases of Favus Contagion from the Lower Animals, by Dr. S. Sherwell; Some Observations on the Growth of Achorion Schönleinii in America, by Dr. L. Heitzmann; Morphœa Atrophica, by Dr. R. W. Taylor; Psorospermosis, by Dr. M. B. Hartzell; Report of a Case of Adenoma Sebaceum, with Microscopic Drawings, by Dr. J. A. Fordyce; Concomitance and Sequence in Skin Eruptions, and the Influence of one Dermatosis upon another, by Dr. C. W. Allen; The Cicatrices of Syphilis, by Dr. J. N. Hyde; An Unusual Case of Syphilis, by Dr. R. B. Morison; An Exaggerated Case of Impetigo Contagiosa, by Dr. G. T. Elliot; Notes on a Recent Visit to the Leper Hospital at Havana; Leprosy in Charleston, S. C., etc., by Dr. W. T. Corlett; and Notes on the Use of Thilanin, by Dr. G. H. Fox.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

THE NEW YORK MEDICAL JOURNAL, August 13, 1892.

Original Communications.

REPORT OF TWO CASES OF MYXŒDEMA,

WITH ONE AUTOPSY.[*]

By HERMON C. GORDINIER, M. D.,

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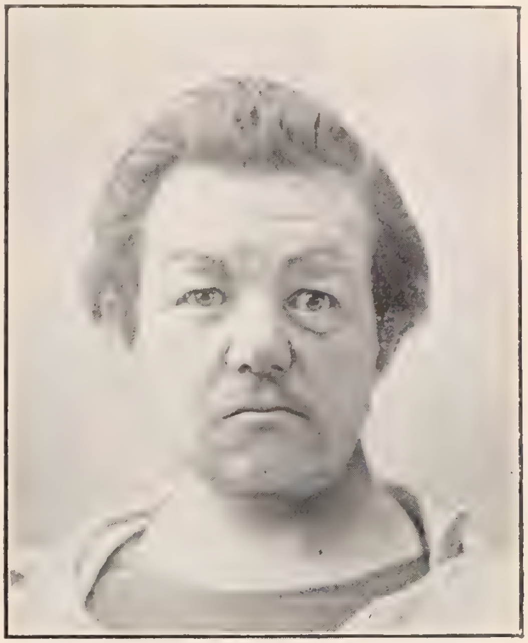
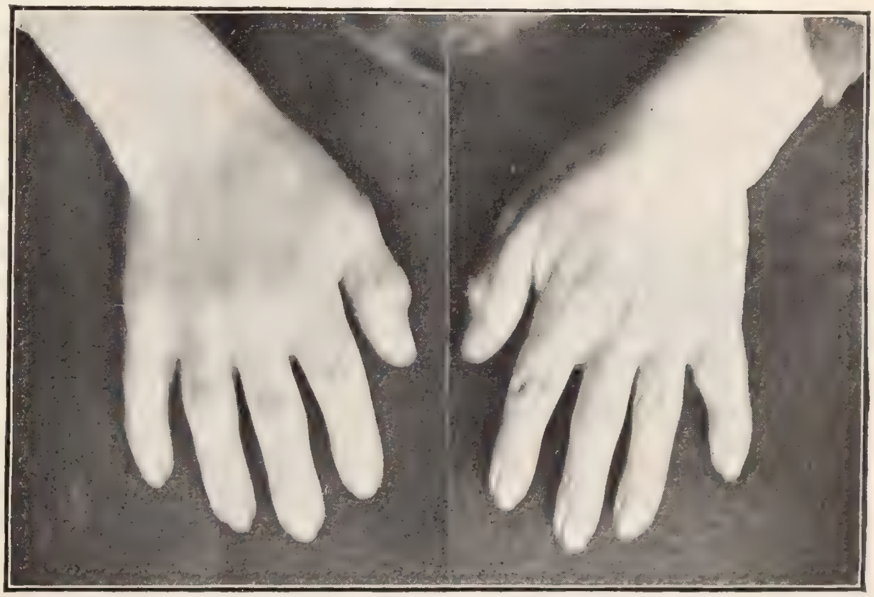
It is my earnest hope in the publication of these cases and autopsy of myxœdema that I have added something to the literature of that rather uncommon and interesting affection.

Patient, William K., aged forty-two, came under my observation, September 3, 1888. Born in Scotland; iron-molder by trade. Has six sisters and three brothers in Scotland and one in Troy. Father and mother dead. Disease not known. Denies syphilis absolutely; has been a hard drinker. Seven years ago was taken with so-called acute rheumatism; it came on very gradually, with pains, neuralgic in character, in the knees and shoulders, which lasted a long time, and then with but little if any treatment subsided. Cold, rainy weather always made the pains come on. Two years ago the pains in his legs were so bad that he could not bear the weight of the bed-clothes. Last winter his feet became so swollen that he had to cut his shoes in many places in order to get them on. Noticed that the swelling in feet and hands is much worse in winter, and always less, and his health in general much improved, with warm weather. Has had repeated attacks of dizziness and heaviness in the head, and during these attacks is mentally much cloudy; these attacks are most always relieved by a profuse nose-bleed which makes his mental condition clearer. Passes at times blood with stools; is doing so at present. Appetite is good and feels well, except that his legs are weak and that it takes him so long to think and to understand simple things. Bowels regular, never troubled with diarrhœa; no hæmorrhoids. Has been unfitted for work over three years. Was troubled when quite young with severe headaches. States that his hair is coming out quite rapidly of late. His eyesight is perfect, as he never has required glasses. No member of his family has ever had a similar complaint. No neurotic history in the family.



Case I.



Case I.

Physical Examination.—The patient is short and stout. Weighs about one hundred and forty pounds, is four feet eleven inches in height. Head is large, block-shaped, decidedly flat-topped; hair dark, becoming very sparse, particularly over occiput. Has a dull and stupid expression; nose retracted at its root; whole face waxy and decidedly puffy. Skin thickened but feels very soft; does not pit on prolonged pressure. Quite a good-sized spot of livid congestion over both malar prominences. Ears large, infiltrated, and wax-like; eyelids very puffy and baggy, upper one especially so, and overhanging the eye and obscuring the superior quadrant of the globe. Lower lids waxy and present several transverse folds. Skin is dry and rough without scaliness. Nose rather broadened, particularly its lower portion. Naso-labial folds on either side markedly accentuated, riding directly up to bridge of the nose. Eyelashes on lower lids sparse. Has a slight, rather thin mustache, and states that he could never raise any beard, and that of late he never shaves, there being no occasion to. Lips puffy and thickened, a little cyanotic and everted. Skin over face and neck universally thickened, but freely movable on underlying structures. Has no discharge of serum from the eyes or nose. States that he has lost his hearing for the past two years. Tongue large and flabby, with a whitish coating. Neck very broad; is double-chinned; a very large deposit of fat in both supra-clavicular regions. The skin over the clavicles and whole chest is so puffy and infiltrated that the clavicles, ribs, and sternum are not apparent. Breasts well developed; no hair in either axilla, on chest, about mammæ, or abdomen. Superficial veins of upper part of chest prominent. The whole body feels markedly cold to the touch. Abdomen large and pendulous. Hair on pubes scant; scrotum thickened and wax-like. No curvature of spine. No evidence of scars of specific nature. Skin of legs and thighs thickened, rather erythematous in color. Hair sparsely scattered from the knees down, not a single hair to be detected above the knees. Never has noticed any scaly eruption on body. Speech rather squeaky, slow, and monotonous. Can protrude tongue in a normal manner. Skin of the hands very loose and puffy, with a decided velvety feel. Hands a little cyanotic; nails apparently normal; gums very vascular and bleed easily; teeth very poor and often get loose. Temperature, right axilla, 96°; left, 95° F. Pulse, 80. Examination of thoracic organs negative. Thyreoid gland not to be felt. Liver and splenic dullness normal. Feet feel cold, ankle joints freely movable. Sweats about the face, but never about the rest of the body. Grip of hands very weak. No paresis of the legs. Patellar tendon reflex normal. No sensory disturbances. Is very sensitive to cold. Pupils normal. Optic discs hazy, vessels rather indistinct.

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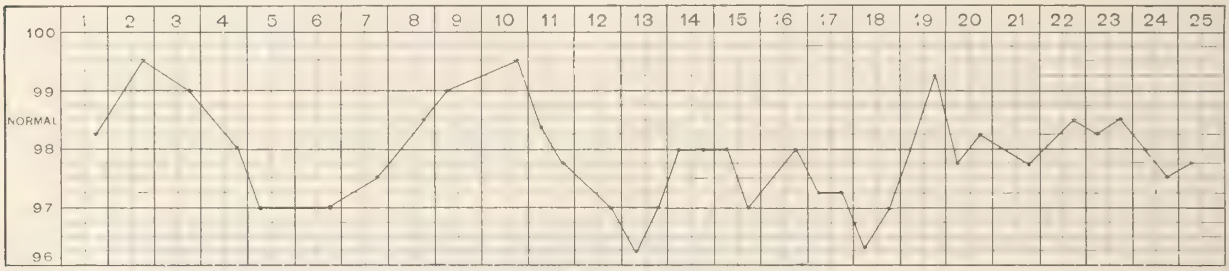
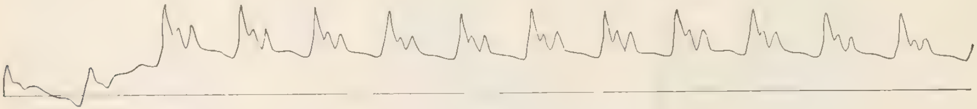
[*] Read by title before the Medical Society of the State of New York at its eighty-sixth annual meeting.



Case I.—Temperature Chart.

November 8, 1890.—Two years have elapsed since I saw him last. His condition at present is decidedly worse; is much weaker in legs, which is especially noticeable when he goes up or down stairs. He states that directly after his meals he has attacks of nausea, with decided vertigo in addition. Was perfectly well in Scotland, and dates his whole sickness since his arrival in America. Has at the present time a watery discharge from the nose; this condition has existed six months. Sexual desires entirely abolished; feels cold at all times, particularly in the extremities; has no pains or aches; sleeps well; has headaches occasionally. Teeth carious; gum soft and vascular, and bleeds with the slightest friction. Speech slower and more monotonous than two years ago, and he has difficulty in getting out the words. Skin covering ears very much swollen, as is that covering the eyelids. Lips swollen and very puffy. Skin of face soft to the feel, but decidedly thickened. Can hear the tick of a watch but one inch from the ear; bone conduction increased, drum membrane thickened. Optic discs hazy. Temperatures, 97·5° F. in left axilla, 95·5° F. in right. Hair on back of head scanty. Seborrhœa-like deposits all over scalp; hair does not fall out as it did two years ago. Skin of hands soft and velvety, and lies in deep wrinkles; hand very cold to the touch. Finger nails slightly curved from before backward, and marked by longitudinal ridges. All movements are very sluggish. Skin over chest and abdomen is very rough and has a feeling somewhat like a nutmeg-grater. Over the entire chest and abdomen a soft, thin, papery scaliness was seen, and over a part of the thorax and sternum a ridge of seborrhœa-like deposits. Skin covering back of neck thickened; distinct atrophy of the left supra-spinatus muscle. Lungs slightly emphysematous. Heart's apex in normal position. Aortic second sound not accentuated. No evidence of cranial-nerve paralysis. All sensations perfect. Patellar tendon reflex normal. Eyes respond to both light and accommodation. Urine, specific gravity 1·022; acid reaction; no albumin, sugar, casts, or blood. Pulse, 80; feeble and easily compressed. Blood, 3,400,000 corpuscles per cubic millimetre; normal in appearance; no increase of white corpuscles. Electrical reactions apparently normal. The muscles supplied by facial and peronei nerves responded quickly to a very mild faradaic current. No altered response to galvanic current.

Patient died rather suddenly at the almshouse with pneumonia, and through the courtesy of the attendant, Dr. Herrick, I was permitted to examine the body.



Case I.—Pulse-tracing.

Post-mortem (*August 6, 1891*).—Height, four feet ten inches. Rigor mortis well marked. Lips, ears, neck, and fingers cyanotic. Brown pigment on dorsum of hands. A very slight growth of hair on scalp, with a decided baldness over occiput, and an entire absence of hair in axilla. Veins well marked. Slight deposit of pigment around nipples. Neck broadened. Abdomen protuberant. Hair on pubes scant. Scrotum small and contained but one testicle, the other being lodged in the right inguinal region. Large quantities of fluid of rather an offensive odor flowed freely from the mouth. The subcutaneous fat was extremely pale. Peritoneal cavity ascitic. Liver fatty, mottled on its surface, and was situated about a finger's breadth below the free margin of the ribs. Right lung was markedly œdematous and adherent at its apex, which was decidedly indurated, and on section cut with a well-defined creak. Base of same lung attached to diaphragm. The left lung nonadherent, crepitation well marked all over except at the base. The whole lower lobe infiltrated in stage of gray hepatization, pneumonic in character. Aorta thickened, narrowed, and atheromatous. Coronary arteries patent, but atheromatous at their orifices. Ventricular walls normal. Mitral valves normal. The right ventricle was filled with ante-mortem clots, but retained its natural size. Left ventricle normal. Weight of heart normal. Gall-bladder was filled with fine particles, sand-like in character. Spleen small, soft, and normal in appearance. Mesenteric fat increased in amount along the descending colon and hung in polypoid-like growths. Suprarenal capsule soft. Right kidney lobulated. Right ureter was about fourteen inches in length, its middle portion being so dilated that it measured one inch and a half in diameter. It resembled in appearance a loop of small intestine. Veins on ureter full. Cortical substance of above kidney decidedly thickened, while the medullary portion in only two places was well defined. The kidney was filled with cysts. Pelvis of kidney dilated large enough to permit two fingers to pass into the ureter. Capsule slightly adherent. The left kidney did not occupy its normal position, but was found on the right side of the body near the sacral promontory, its ureter passing into the right side of the bladder. In shape it was round, flattened above and below, resembling in appearance that of the placenta. It was also lobulated, but not to such an extent as the right. Pale in color, pyramids well defined, cortical substance thickened. Capsule slightly adherent. Vessels on its surface prominent. Bladder distended with urine. The entire colon was infiltrated and thickened. Mucous membrane raised in folds, honey-combed, dark red in color, and on section it cut with a marked creak. These peculiarities were most apparent in the descending colon. The right lobe of thyreoid decidedly atrophied and not larger than a "Boston baked bean." The left hardly discernible from the surrounding tissue. Blood very fluid and does not coagulate very readily.

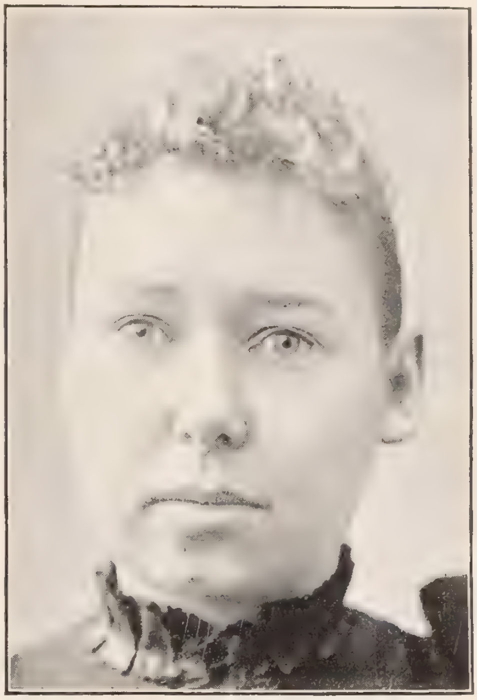
Microscopic Examination.—The brain and spinal cord not examined. The specimens were all hardened in alcohol and stained with Delafield's hæmatoxylin, eosin, and picrocarmine.

The lungs on section presented marked evidence of pneumonia—*i. e.*, an exudation within the alveoli of red and white corpuscles, together with an exfoliation of epithelium with fine round-celled infiltration about the alveolar walls. Small extravasations of blood were seen scattered throughout the stroma of the lung, and situated between the bronchi were dense tracts of connective tissue. Marked peribronchial infiltration with an exudation of large round corpuscles and epithelium with blood-cells in the finer bronchial tubes. Marked pigmentation occurred throughout the lung, which is to be explained by the patient's occupation. Here and there, distributed throughout the different connective-tissue tracts between the bronchi in the lungs, was to be seen a small round-celled infiltration.

Heart and spleen normal.

The liver on microscopic examination disclosed a decided thickening of its capsule, as evidenced by small connective-tissue bands projecting into the liver substance. The interlobular connective tissue was markedly increased in amount, as was the connective tissue about the biliary ducts. The hepatic artery showed a marked thickening of the median coat. Fatty infiltration was also noticed to a slight extent.

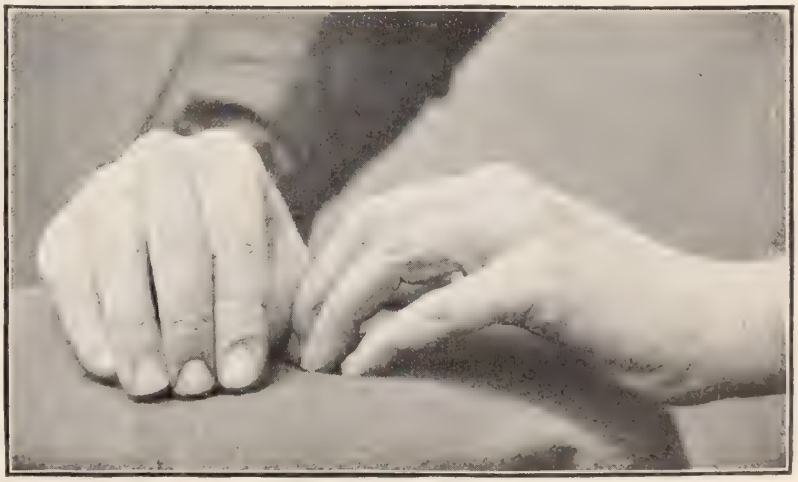
Section of kidney showed a marked increase of connective tissue in the cortical substance, and variously sized bundles proceeded from the cortex into the kidney substance between the Malpighian tufts, in places completely strangling them. Bowman's capsule was decidedly thickened. In some places the vascular loops in Bowman's capsule were completely occupied by connective tissue. There was a marked increase of the intertubular connective tissue. This increase of the connective tissue produced a marked narrowing of the tubules. In this field of connective tissue throughout the kidney the same round-celled infiltration was seen as well as in the liver and other organs. There were no casts of any form detected in the tubules. Small extravasations of blood were found in the cortical substance of the kidney suprarenal capsule. The interstitial tissue was increased in amount, and throughout its entire area the same round-celled infiltration as was seen in the other organs was present, as was also a distinct fatty infiltration.



Case I.

The mesenteric fat presented between the fat globules fine connective-tissue bands. Among the fat globules red corpuscles were found in abundance. In this connective-tissue stroma the same round-celled infiltration was observed.

Muscles were found to be normal. No atrophied fibers, and the striations were all perfect.

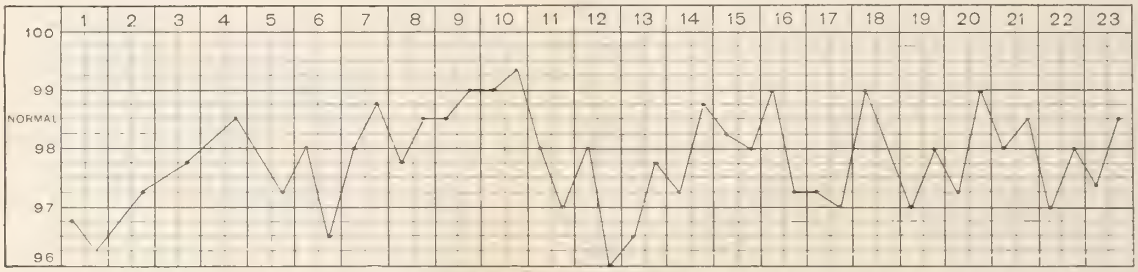


Case II.

Thyreoid Gland.—The gland tissue proper was entirely absent, and in place of it large bundles of connective tissue existed with a slight infiltration of spindle cells, but no round-celled infiltration observable. Variously situated throughout this field of connective tissue, where any remnant of gland structure remained, small extravasations of blood were plainly visible.

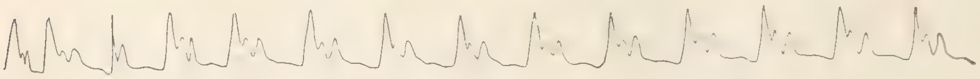
The arteries presented a marked thickening of the median coat.

Skin.—The superficial layers of epidermis appear normal. At the junction of the mucous with papillary layer of corium an infiltration of densely packed small round cells is to be seen; this small round-celled infiltration extends down the sides of the papillæ and is lost at their bases. The papillary connective tissue seems in places densely packed, whereas in others distinct spaces are to be seen between the delicate bundles; the spaces are more broadened in the reticular layer than normal. The hair follicles are to all appearances normal; the sebaceous glands are normal, as are the Paccinian bodies. The sweat glands are almost entirely replaced by connective tissue.



CASE I.—Temperature Chart.

CASE II.—Lettie S., aged twenty two, single. Father died of dysentery, mother of apoplexy; one brother died in 1888 of pneumonia, and he presented a typical clinical picture of myxœdema and was reported in full by Professor Henry Hun in his most admirable article on myxœdema in the *American Journal of the Medical Sciences* for July and August, 1888. A sister has a slight myxœdematous appearance; has one brother living and in perfect health.



CASE II.—Pulse-tracing.

Present affection began about two years ago with a marked feeling of lassitude, a loss of appetite, and an inability to perform the ordinary household duties. Soon after she noticed that her face was becoming swollen and bloating. This bloated appearance has continued and has been gradually on the increase ever since; complains of swelling of the abdomen; feels very weak and tired; suffers from insomnia; does not get dizzy, nor have attacks of dyspnœa. She has a tired feeling in the extremities, and feels much fatigued after a long walk or going up a hill. Feels very cold most of the time. She occasionally bleeds quite profusely from the gums, and the slightest irritation excites hæmorrhage from them. Has cold in the head most of the time and discharges a clear, serous fluid from the nose constantly. Menstruation first made its appearance at ten; has no pain, but flows profusely for about seven days. Her arms and legs are often rough and decidedly scaly.

October 30, 1891.—Patient, a very intelligent girl, has no impediment in speech; answers questions promptly and accurately. Walks perfectly, does not sway to either side; stands perfectly with eyes closed. Rather short and stout. Has a marked myxœdematous appearance of the face, as evidenced by puffiness of the lids, particularly the lower ones; accentuation of nasolabial folds; a general swelling and puffiness of face, which feels a little rough and is covered with fine papery-like scales. Hair on scalp rather sparse, but no definite baldness. No seborrhœa-like deposit on scalp. Lips markedly thickened, ears large, but do not appear infiltrated; no pitting of face or forehead on pressure. Tongue normal. Mucous membrane of throat and larynx normal; gums very vascular and even with teeth, and bleed on the slightest friction; teeth seem in good condition. Tissues covering thorax override the clavicles, completely obliterating them. Skin of thorax soft and not scaly. No hair in axillæ, on arms or legs, and very scant on pubes. Heart and lungs normal, venous hum in neck. Skin of arms and legs pale white, very rough and scaly, and reminds one very much of the condition of ichthyosis. Hands small, skin very soft and velvety, lying in loose folds and presenting many transverse wrinkles. States that they are often much more swollen than at present. Nails normal; reflexes normal; no paresis or sensory disturbances; electrical reaction normal. Patient can not use her eyes steadily without much fatigue. Vision $\frac{10}{20}$ in left, $\frac{15}{20}$ in right; discs normal. Hearing acute; throat pale; vocal cords normal; whole larynx pale. Patient is much worse in winter.

The patient has been under my care for over a year, and I can see but little improvement in her condition. She thought at one time that pilocarpine did her good, but it never excited sweating or salivation.

HÆMOPHILIA:

ITS PATHOLOGY AND TREATMENT.

*WITH REPORT OF CASES.**

By J. L. WATKINS, M. D.,
NASHVILLE, TENN.

THE following is the history of a case which is familiar to several of the members of the Academy. It came under my observation about a year and a half ago, when I was requested to make a chemical examination of some of the blood lost by the patient.

William R. C., aged sixty-one years, six feet tall, weighs one hundred and fifty-five pounds, and is of bilious temperament. His general health is excellent, digestion good, sleeps well. There is no hereditary taint of any character whatever, and the patient had always had good health, except when about twelve or fourteen years old, had rheumatism; with this sole exception there was absolutely nothing, either in his acquired disposition or his constitutional heritage, to account for the disease which he is now the subject of, and which in 1878, in his forty-ninth year, began as a serious, prolonged, and uncontrollable hæmorrhage from the nose. This lasted one month, when it stopped, but for a short time only, returning with more or less severity at intervals during the next three or four years. Two years of freedom from hæmorrhage followed, when it again returned, the bleeding for the next two or three years occurring only during the summer. Did not bleed in 1888 and 1889, but in 1890 bled continuously for eight months, until the hæmorrhage was stopped by the treatment referred to later on. Was free from hæmorrhage then until some time last October, a little over a year, when, the treatment having been left off, it returned and continued slightly for a few weeks, when, upon resuming treatment, it again ceased.

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* Read before the Nashville Academy of Medicine and Surgery, December 17, 1891.

With the exception of a slight attack of rheumatism four years ago, the patient's health has always been good during the intervals, and only becoming slightly weak and anæmic during the hæmorrhages, there being no other apparent result, not even nervousness, which is so common in these cases. This, then, is one of those peculiar and rare instances of what are called "bleeders," the pathological condition being termed, variously, the "hæmorrhagic diathesis," "hæmophilia," etc., and I report it because of several unique features, and probably instructive, at least significant facts brought out. The hæmorrhage occurs at various times from different localities, as eyes, ears, nose, one side at a time, mouth, bowels, kidneys, pores of skin, and from mosquito bites, scratches, and other slight traumatisms; never from stomach or lungs. The last time the hæmorrhage returned it would commence usually early each morning, becoming less and less as the day advanced, finally stopping in the afternoon until the next morning. In these daily hæmorrhages the bleeding was always more easily controlled after the patient took exercise in the open air. One would think that exercise would increase the flow, but we will see directly why it does not in this case.

During the progress of a hæmorrhage from the nose, from which locality it occurred most frequently, the arteries of the head, face, and neck could be seen to pulsate violently, and pressure upon those arteries supplying the hæmorrhagic point, different at different times, would stop the bleeding as long as kept up, but the pressure being released, it would start again. Tampons made of cotton, cloths, sponges, and other material, seem to have little or no effect in controlling the hæmorrhage from the nose, serving only to diminish it slightly, and to act mechanically, so as to direct the stream of blood out through the front of the nose, instead of allowing it to pass down the throat, which would be better, no matter how repulsive the idea, as it would then go into the stomach and be digested and saved, no small item in conserving the strength of one whose wasting is almost continual. Of all the remedies tried, local and general, up to a year ago, when he came under my treatment, none were successful for any length of time, the hæmorrhage seeming finally to wear itself out and to stop for some months. One thing, however, which was found would stop the flow for a time, and the only thing which did do so quickly and effectually, was a plug of ordinary fat meat—bacon—cut so as to fit the nose accurately. This being fitted in, the hæmorrhage would stop in a few minutes, and be controlled entirely for several days, when, all the fat and oil being absorbed, the bleeding would start again. A cotton or sponge tampon would only lessen the flow of blood externally while they were being saturated, a few moments at the most, and were practically useless. The plug of fat meat would be bleached perfectly white, and not a trace of blood would be found when taken out and examined with the naked eye.

Aside from the effect of the salt on the meat, I do not know how it acts other than mechanically, nor did I ever hear of its use as a hæmostatic before, even in epistaxis; but since then I have used it in several cases of obstinate epistaxis with gratifying success. Being cheap and easily obtained, I can confidently recommend it as a domestic remedy in such cases.

Fagge, in his *Practice*, says the most advanced age at which this disease was ever known to commence, or to manifest itself in a sufficiently serious degree to constitute a hæmophilia, was twenty-two years, it being commonly one of extreme youth. But this case never had a hæmorrhage until in his forty-ninth year—more than double Fagge's limit. Another feature is the absence of hereditary history, not only of hæmophilia, but of its kindred diseases—scurvy, purpura, rheumatism, etc. Now, the authorities on this disease dogmatically assert that heredity is such an important ætiological factor that where it is absent there is a mistake in the diagnosis, or the patient is ignorant of his family history. As to the diagnosis in this case, whether the aggregate of all the symptoms—the *tout ensemble*—are sufficient to entitle it to the dignity of the technical name "hæmophilia" or not, one thing is certain: he belongs to that class of individuals known as "bleeders," the hæmorrhage having occurred at intervals now for fourteen years, running two or three years at a time and in large quantities, often a pint or more in a day. During the hæmorrhagic periods purpuric spots appear on the body, but there are no swollen joints—another variation from the rule. As to his antecedents, the patient is an intelligent, educated man, whose family has been long known in their locality, and they assert positively that no such disease, nor any even remotely connected with it, has ever occurred in any branch of the family, which is known three or four generations back. So, notwithstanding the dictum of authorities and the absence of the two cardinal features mentioned, and the advanced age of its appearance, I think the frequency, duration, and amount of the hæmorrhages warrant me in calling the case one of hæmophilia. It started *de novo* with this patient, and I believe had its inception in a remote way in the attack of rheumatism early in life. Now let us look into the pathology of this condition. It has been variously attributed to a lack of fibrin in the blood, to thinness of blood-vessels, fatty degeneration of the heart, tendency to plethora in capillaries, etc., and all of these denied and proved untrue; so that we have no positive knowledge on the subject; and any treatment of the subject which does not explain why occluding thrombi can not be formed in the mouths of the bleeding vessels is on the wrong track. Investigation should be made in the three directions where the fault probably lies: 1. In a functional disorder; the vaso-motor supply of the vessels may be at fault, not allowing the muscular layers to contract. 2. There may be some organic fault of the muscular fibers themselves, aside from any nerve influence, which prevents or hinders contraction. 3. In blood changes, as to corpuscular or liquid elements, retarding coagulation. One or all of these conditions may occur: 1. In this case an increased blood-pressure is shown by the throbbing cervical arteries, and it is a well-known physiological law that contractility of involuntary muscular tissue of the vessels is in inverse proportion to the blood-pressure. The high blood-pressure, diminishing contractility, was probably one cause of the continued bleeding in this case. Exercise, with increased muscular exertion and consequent increased oxidation, increases normal blood-pressure; if the blood-pressure be abnormal, exercise, when carried to the point of producing perspiration, has a tendency to reduce and regulate it, which explains why our patient's hæmorrhage was reduced each morning after taking exercise, and which would have had the reverse effect of increasing traumatic or other hæmorrhages.

2. It was shown by Ringer and Buxton recently that bicarbonate of sodium and chloride of potassium, when added to the circulating medium of certain animals under experiment, would cause the heart to run down and cease beating, whereas, the addition of the lime salts, especially the phosphate, would quickly restore the circulation to its normal standard, on account of restored contractility. But when this salt was added alone the contractions were so vigorous that it finally caused spasm and fusion of the beats, from excessive stimulation of contractility. When a fluid containing phosphate of lime and potassium chloride was added, the latter to antagonize the excessive stimulative action of the lime, they were capable of keeping up a uniform action of the heart for several hours. These facts suggest that in our case the muscular fibers of the bleeding vessels may be deficient in those chemical salts which favor contractility, especially the lime salts. This will be made more apparent in the next and third line of investigation, which we think is the most important, bearing upon the composition of the blood, and any changes which might have taken place to retard or destroy its coagulating power.

3. Having found that there was no deficiency of fibrin, as was originally suggested, and that the corpuscular elements were normal, investigations should have been made of the chemical composition of the blood. Having done this, we think we can show that the fault in these hæmorrhagic cases is a deficiency of lime salts in particular, and probably other inorganic alkaline salts; or that all three of the causes suggested may be present, and our contention is substantiated, not only in the chemical and physiological laboratory, but pathologically and clinically also. The experiments just given prove the effect of these salts upon muscular contraction, and the same thing can and has been proved as regards the coagulation of blood. Sainsbury and Ringer, in 1890, carried on these experiments on a more extended scale than has been done before, and proved the importance of the inorganic salts in the coagulation of blood and milk, which, as they are so similar in their anatomical and chemical composition and their physical behavior, both having corpuscles in a liquid menstruum, separating under certain conditions into a coagulum and supernatant fluid, it is eminently proper that they be examined together and compared.

What has been asserted concerning the influence of lime salts upon the coagulation of blood holds good with reference to milk. The inorganic salts have always been assumed to have a part in the coagulating process, but which salts and in what way was not known; that they do take a direct and essential part in the process has been demonstrated by the investigators mentioned. The lime salts seem to be the indispensable constituent, their presence facilitating coagulation in a striking way, while complete absence of them renders coagulation impossible. On the other hand, the sodium and potassium salts tend to restrain the formation of fibrin, probably by holding it in solution, so that coagulation does not occur. Authus and Pagès also assert that the lime salts are necessary in the coagulation of milk and blood, and that anything added to these fluids to precipitate their calcium salts will prevent coagulation—such as the oxalates or fluorides of the alkalies. Fifteen grains of the oxalate added to a quart of blood precipitates its lime salts, and coagulation will not be possible, even when it is largely diluted, as would have been the case had sodium sulphate been used to prevent the clotting; but if calcium chloride is now added, clotting is again possible. Also fibrinogen obtained from blood which has had the oxalate treatment mentioned will not coagulate under the influence of the fibrin ferment. Their theory of coagulation is that fibrinogen, influenced by the ferment, in the presence of the lime salts, results in an insoluble lime compound—viz., fibrin—the fibrin factors being fibrinogen, fibrin ferment, and lime salts. In the coagulation of milk we have two steps—(1) the chemical transformation of the casein, and (2) the coagulation of this modified casein. The first step is owing to the action of the ferment, and the reaction is accelerated by weak acids, as CO_2, and by salts of the alkaline earths (phosphates of magnesium and calcium), while it is retarded or prevented by other alkalies, alkaline carbonates, and cold. The substances formed by the casein and ferment are not precipitated by the further action of the ferment, but may be coagulated by heat or the lime salts. The actual curdling is produced by the lime salts, because if they be removed it can not occur, although the ferment is still able to produce casein. What could be more conclusive? At first glance, the use of lime water in milk to prevent its curdling is a seeming contradiction of the idea that lime salts favor coagulation, but close attention to the above statements will correct the impression; there we are told that simple alkalies and alkaline carbonates prevent coagulation. Lime water is the hydrated calcic oxide, a simple alkali; while it is the alkaline earth, phosphate of calcium, that favors coagulation and curdling. Many of these experiments have been verified by Professor William Magil, of the department of organic chemistry, Vanderbilt University, and myself, and not only verified, but carried further, especially with human milk, and upon another line of investigation, the results of which will be given soon in another paper.

In giving the above-described experiments and their results, I am indebted to the *Annual of the Universal Medical Sciences* (Sajous, 1888, 1890, and 1891), from which I have quoted largely, giving, in the main, the exact language used in those volumes. The common theory of coagulation, as we know, is that there are two albuminoid compounds, known as fibrinogen and fibrinoplastin or paraglobulin, which unite under the influence of the fibrin ferment, erroneously thought to be the result of disintegration of white corpuscles, and produce the phenomenon known as coagulation. This, with various slight modifications by different investigators, is what is accepted by the profession now.

One reason why there is so much confusion on this subject is that no distinction is made between the precipitation or coagulation of the albumin in solution in the serum, or rather plasma, the result of adding various reagents, and that spontaneous physiological coagulation, the result of union of the two albuminoids and their ferment. Some even maintain that the blood plaque is the coagulating element, and that this plaque is a transition form, or a remnant, of one of the corpuscles. But one thing is certain: that even if all the elements of coagulation mentioned are present, that process can not occur unless a certain amount of inorganic salts is present, especially the lime salts. And this statement is not at variance with the theories of coagulation now accepted; it simply supplements them. The fibrinogen, the fibrinoplastin, the ferment, and the corpuscles may all be present, as they are in hæmophilic blood, but fail to produce coagulation because of the deficiency or absence of lime salts in some or all of these elements. We know that plasma contains normally a definite amount of lime (calcic phosphate, 0·311), as do also the corpuscles (calcic phosphate, 0·114); and if the plaque be a transition form of either, it probably contains lime. It is true that these salts are present in only a small proportion—hardly more than a trace in the corpuscles—but the same thing is true of iron, which is present in even smaller amount, yet how essential to a normal condition of the system is the presence of a sufficient amount of iron! Now, by the most careful investigation, I have found a decided deficiency of lime salts in this patient's blood. I could not state the exact amount of the deficiency, because the quantity varies physiologically, and because the specimens I had were exhausted in making comparative and qualitative tests. But comparison with normal blood showed a marked difference in favor of the latter.

It may be objected that even normal variation in the quantity of salts is so great that such tests are not conclusive; but in the several specimens of normal blood tested the difference was too great to admit of doubt, there being little more than a trace of lime in the hæmophilic blood. It did not even have an alkaline reaction when tested by several methods and standard solutions, but was neutral, if not slightly acid, and this could not be said to be due to decomposition, as the blood was not yet a day old, and normal blood continued to show its alkalinity much longer. The most striking and significant feature of the investigation was that the addition of a small amount of soluble superphosphate of calcium, the phosphate being insoluble, rendered this hæmophilic blood slowly coagulable; and when the lime was withdrawn by precipitation, further coagulation was hindered. I will mention incidentally, though it probably has little or no bearing on the case, that in two days after I received this blood, not a corpuscle or any other microscopical object could be seen in it with a sixteenth-inch objective and the highest power eye-piece made, while the normal blood showed corpuscles plainly days after being drawn. Neither could any plaques be seen in a fresh osmic-acid preparation; to those who believe they are necessary to coagulation, their absence in this case may be suggestive. As this deficiency of lime occurs in the plasma, corpuscles, and fibrin, I am not prepared to say which is most at fault in non-coagulation, but am decidedly of the opinion that the fibrin must bear the burden of blame, as it is the coagulating element of the three; and while both plasma and corpuscles showed a marked deficiency, there was an entire absence of lime in the fibrin, as shown by the most delicate test known to science, the spectroscope test, which, with marvelous and unerring accuracy, will exhibit the presence of one one-millionth part of a grain of lime. The fibrin of normal blood showed beautifully the bright characteristic lines, Caβ green, and Caα orange; but in this hæmophilic blood, from three specimens taken at intervals of several months,* the fibrin showed, after being properly prepared for spectroscopic test in the first specimen, no calcium at all; and in the second and third the calcium lines appeared only very faintly and just at the first instant of the test, dying out immediately, indicating the presence of only the faintest trace imaginable—practically none.

So much for the chemistry and pathology of the case, but what of it clinically? Having made the above-mentioned investigations, I was constrained to give them a practical test, so, in addition to a tonic of phosphoric acid, strychnine, and iron, I put the patient upon lime salts and made him drink lime water; and, to my astonishment and delight (I speak candidly), the hæmorrhage stopped entirely in a week. This was kept up a month, when, the patient having left off the use of his medicines, except the tonic and lime water, the hæmorrhage returned in a few days. But it was discovered that he was still using the same lime that he commenced with in making his lime water, by putting a small amount of lime in an open vessel and pouring water on it; and as fast as this water was consumed, more water was poured on the same lime, which, of course, explains the return of the hæmorrhage, as the lime he started with was soon converted into insoluble carbonate by absorption from the atmosphere, and the water he poured upon it remained simply water, of course. As soon as the bleeding returned, his son, who is a physician, found out he had stopped taking his lime salts; he made him begin them again, and also take fresh lime each time the lime water was made, and keep the latter in a stoppered bottle. The hæmorrhage again ceased in a few days and remained so under a continuance of the treatment, the tonic being left off after a while and natural mineral water, rich in lime salts, being substituted for those salts in substance, and the home-made lime water continued. A little over a year of freedom from hæmorrhage having passed, the patient thought himself entirely well and left off his lime the latter part of last September. In a few days (October 1st) the hæmorrhage started again, but it was very slight and only occurred each morning, as before stated. The lime water having become so repulsive to the taste, the treatment was not renewed when the hæmorrhage reappeared, with the exception of the fat meat plug, which had to be renewed every few days. This continued for about three weeks, when the lime and tonic treatment was resumed, and again the hæmorrhage stopped, and has remained so up to date. This same tonic treatment had been used before in connection with other remedies, but without benefit. This looks conclusive, in this case at least. His urine had always contained an excess of the phosphates, which was not appreciably increased by the lime treatment. It may be mentioned as significant, and I am not sure but that it bears an ætiological relation to the case, that the patient had always lived in a section of the country where most of the streams were so strongly impregnated with lime as to be disagreeable to the taste of one not accustomed to it, and renal and vesical calculi are very common in this section. The patient, being afraid of calculus himself, abandoned the use of this water about a year before his first hæmorrhage, and since then has used water from a "freestone" well, containing very little lime. This incident may have been one of the causes, and may explain the lateness of its development in his case. His early rheumatism was probably remotely connected as a cause, its effect being more or less permanent, and in rheumatism, an acid pathology, may it not be the case that this acid so crippled the assimilative powers of the blood for the alkaline salts that when the supply of these salts was so diminished at the time of the change of drinking-water from lime to freestone, that a deficiency soon resulted, which in the course of time developed into hæmophilia?

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* The rest of the analysis, except this one experiment, is based on tests with four specimens taken at different times.

In connection with the causation and pathology of hæmophilia, we may glance at its kindred diseases—scurvy and purpura hæmorrhagica. In chemistry we have several instances of elements forming themselves into groups, the members of each having many physical and chemical properties in common, and, though differing somewhat in their behavior, there is a general similarity, a family likeness, running through the whole group. This is especially the case with the alkaline groups, composed of the alkaline metals and earths, sodium, potassium, calcium, ammonium, etc. We have this same condition obtaining in pathology—indeed, it is in connection with this same alkaline group that a prominent pathological group is noticed, the kindred diseases, hæmophilia, scurvy, and purpura hæmorrhagica, which have many symptoms and pathological features in common. In purpura hæmorrhagica we have, according to McKenzie, a deficiency of sodium salts; in scurvy, according to Garrod, a deficiency of potassium salts; and in hæmophilia I think it is clear there is a deficiency of the lime salts, all three salts being more or less concerned in the process of coagulation. In these diseases Nature has been guilty of a sin of omission in not furnishing or keeping up the supply of the inorganic salts mentioned, giving us a negative pathology. On the other hand, we have a positive pathology in the sin of commission on the part of Nature in diseases remotely associated with these—rheumatism and gout—in which there is too bountiful a supply of certain salts, soda and lime as urates in gout, and of lactic acid and its salts in rheumatism. The formation of thrombi—coagulated blood—is favored in gout, in which there is not only the excess of lime as urates, but, according to Senator, the carbonate and phosphate of lime also, and this condition is in contrast with that of hæmophilia, where coagulation is retarded by a deficiency of lime. I do not hold that these chemical deviations are the principal pathological features of the above diseases, but that they are of sufficient importance not to be overlooked in considering their ætiology and therapeutics.

The great immunity of women from this disease is not only a remarkable fact, but one which favors the prominent idea of this paper. The proportion of males over females is 13 to 1; how can such a striking difference be accounted for? Certainly not on the grounds usually submitted in male preponderance, such as greater exposure, habits, etc.; these things would cut no figure in an almost exclusively hereditary disease, as is claimed for this one. It is probably the case that Nature in the female having to prepare her blood each month for a possible addition, must increase, if not the actual ingredients of the blood, the selective power for such things as are necessary for fœtal life, and as the lime salts preponderate in fœtal blood and the female must prepare each month for the formation of fœtal structures, bones among them, requiring a large amount of phosphate of calcium, the very salt which favors coagulation and lessens the opportunity for hæmophilia. She is then much more apt to have an abundance of phosphate of calcium present, or the selective or assimilative power of the blood for the salt is necessarily so much greater than that of the male, that she is not so likely to have a deficiency. Indeed, it has been shown that woman has a greater amount of phosphate of calcium in her blood than man, and that this amount is increased during pregnancy (Basquerel), and this may account for the comparative rarity of copious and alarming hæmorrhages during or after labor, and the ease with which they are generally controlled. The probability is that the same area of bleeding surface and extent of open-mouthed sinuses bleeding at any other time than the puerperal period would be much more difficult to control. In man there are from 6 to 7 parts in 1,000 of inorganic salts, 0·425 of which is calcic phosphate, and in woman there are 8 to 9 parts in 1,000, of which 0·550 is calcic phosphate, which is largely increased during pregnancy (Basquerel and Rodier). Normally the blood of a pregnant woman is not drained of its lime salts to supply fœtal structures, but the selective powers are increased, as already mentioned, so that not only is a deficiency prevented, but an excess of these salts is often allowed to accumulate, as is shown by the fact that more than half the pregnant women have, as a result of this excess, osteophytes, or thick calcium plates under the skull (Rokitansky). This fact of larger supply of lime salts in the female accounts for the more rapid coagulation of female blood, the first appearance of coagulation in woman being, according to Nasse, in two minutes and a third, and in man in three minutes and three quarters, and the entire, completed process in the former being proportionately shorter; and in the puerperal woman still less time is consumed. This increased tendency to coagulation in pregnant women is also shown by the readiness with which they have the formation of thrombi in varicosed veins.

The mode of hereditary transmission of hæmophilia is puzzling, almost paradoxical, at first sight, but a little thought will clear it up. It looks strange that women are almost exempt from the disease and yet are more apt to transmit it to their children. We must first accept the proposition, which I think no one will question, that, all things being equal, the maternal hereditary impressions, as a rule, are much stronger than those of the father. Men who are bleeders rarely beget bleeder children by healthy women, because the pathology, in the result, being diluted by half to begin with, is subjected to the stronger impression of the mother, whose blood, containing a surplus of lime salts, supplements the deficiency, overcomes the weaker paternal impression, and sufficiently strengthens the assimilation to practically subdue the hæmorrhagic tendency. Men belonging to bleeder families, but not bleeders themselves, rarely beget bleeder children by healthy women for the same reason. But the children of women who belong to bleeder families, though themselves not bleeders, are generally subject to the disease, because the hereditary taint which comes through the mother being stronger than any paternal impression, it passes through to her child, while in herself, as explained above, she may contain in her blood a sufficient quantity of lime salts to hold the hereditary weakness of assimilation in abeyance. Her male children are apt to be bleeders, but most of the female children escape, and those who become bleeders are only so while very young, the condition almost invariably disappearing when menstruation is established, for reasons already given.

There are yet other physiological, pathological, and clinical facts which go far toward proving that the inorganic alkaline salts, especially those of lime, are important, if not necessary, in blood coagulation; but limitation of space compels me to confine myself to only a few more. In addition to hæmorrhages in scurvy and purpura, we observe them frequently in rickets and malacosteon, in both of which a deficiency of lime salts occurs; in rickets, from failure, not of the supply of lime salts, but of their appropriation from the blood (or assimilation) to perfect the structure of bone; in malacosteon, from too great a drain upon the maternal blood for material for fœtal structures, the ordinary methods of nutrition failing to furnish them; they are obtained, by preference, from the pelvic bones of the mother, because of the pelvic hyperæmia of pregnancy, softening and deformity of the pelvis resulting. There is also, probably, a washing out of these salts by an excess of lactic acid, which is the principal cause in non-pregnant cases. Hæmorrhages frequently occur in these diseases in and around the bones, where the lime salts are most lacking. In rickets the faulty assimilation of lime differs in degree, manner, and location from that of hæmophilia. Goodhart and others report cases of hæmorrhagic rhachitis and hæmorrhagic malacosteon, and combinations of these two diseases with either hæmophilia, purpura, or scurvy are not rare occurrences. In lardaceous disease, in which there is a deficiency of lime salts from excessive suppuration, there is, according to von Ziemssen, a great tendency to hæmorrhage. The blood of an embryo or fœtus will not coagulate until ossific points make their appearance in the fœtal skeleton (Boll, in *Archives of Anat. and Phys.*).

These facts, with others of almost equal importance which I have no room to bring in here, naturally lead to the formulation of the following laws: 1. In all diseases and conditions in which there is a deficiency of alkaline inorganic salts, especially those of lime, there results a hæmorrhagic tendency, with slow or imperfect coagulation. 2. The reverse of this is also true—that in those conditions in which there is a hæmorrhagic tendency with slow, imperfect coagulation, there is a deficiency of those salts. 3. Where we have an increase of these salts we have rapid coagulation and tendency to formation of thrombi and easily controlled hæmorrhage. All this is true except as regards the salts of ammonium, which, if present in the blood, as in ammonæmia, produce a hæmorrhagic tendency, with imperfect coagulation, by retarding, if not preventing, the formation of fibrin which it holds in solution.

Since reading this paper I have received reports of two cases of hæmophilia treated in accordance with its principles. The first was reported to the Nashville Academy of Medicine by Dr. O. H. Menees, two or three weeks after the paper was read. The case was that of an infant which bled from almost every part of its body, externally and internally—the worst case for its age I know of. The usual remedies had all been tried and failed; so the child was put upon lime salts with lime water and the hyperphosphites of lime, etc., with the effect of immediate benefit, which progressed to a cure in a short time. The styptics, which at first failed to coagulate the blood, accomplished that result a short time after the lime treatment was begun. Dr. Menees was repeatedly told that the child could not recover, and it looked that way; but at the last meeting of the Academy, nearly two months having elapsed, he reported his patient in perfect health. I regret that I could not obtain any of this patient's blood, as the bleeding had stopped when I heard of it. But in January I received for examination from Dr. Covel, of southern Kentucky, a specimen of hæmophilic blood from an infant. Chemical and spectroscopic examination gave practically the same result as in the first case, and the same treatment was recommended with the effect of immediate reduction of the hæmorrhage, which was completely checked within a week. One would infer from these two cases that infants are more susceptible to the treatment than adults and in a shorter time, which is nothing but natural. I hope to be able to present more upon this subject soon, and to give the results of any investigations and analysis of other cases of hæmophilia which may be submitted to me.

164 North Cherry Street, *March 24, 1892.*

The late Dr. Aitken.—"The colleagues of the late Sir William Aitken, M. D., F. R. S., who served with him in the course of the thirty years during which he held the appointment of professor in the Army Medical School, are taking steps to erect a tablet to his memory in the chapel of the Royal Victoria Hospital at Netley."—*Lancet.*

OPEN ARTHROTOMY

FOR OLD BACKWARD DISLOCATION OF THE ELBOW JOINT.[*]

By LUCIUS W. HOTCHKISS, M. D.

Articular surgery, as applied to the treatment of irreducible luxations, is of comparatively recent growth, though Blumhardt (*Gaz. méd. de Paris*, 1847), as far back as 1847, reported a case of old elbow-joint dislocation treated by arthrotomy. Before the commencement of the antiseptic era, surgeons hesitated to advise any operative procedure which necessitated the opening of a joint cavity, and the often fatal accidents which followed such attempts certainly seem to have justified them in their fears.

For the past few years, however, several surgeons in this and other countries, emboldened by the success of the application of the antiseptic method of wound treatment, have sought to interfere in certain irreducible luxations of the various joints, and to establish on a rational basis some form of effective treatment. Successful cases of arthrotomy at the elbow have been reported by von Lesser, Trendelenburg, Ollier, Nelaton, Stimson, and a few other surgeons. In the elbow-joint dislocations irreducible by ordinary methods Nélaton declares his preference for the operation of excision as being superior in its results to those obtainable by an arthrotomy. He makes it the operation of choice in all cases of over six weeks' to two months' standing, and, indeed, many surgeons agree with him.

The excellent results obtained in a series of six cases of irreducible elbow dislocations operated upon by L. A. Stimson[†] by the method of open arthrotomy without section of the olecranon, together with several successful cases reported by others, would seem not only to establish the operation as a legitimate procedure in such cases, but also to promise the restoration of a more perfect joint function than can be obtained by an excision. For by an arthrotomy it is possible in many cases to restore perfect coaptation of articular surfaces, and should reduction be found impossible by this method, or should the case prove unsuitable for its application, an excision of the articular ends of the bone can be easily and readily performed through the same incisions. The report of the following case is offered as a contribution to a subject about which comparatively little has been written:

Case.—Michael W., aged forty, laborer, was admitted to Bellevue Hospital, October 23, 1891, with a backward dislocation of the right elbow joint of several months' standing and which had been untreated.

On examination, the patient was found to be unable to flex his right forearm beyond 150° or extend beyond 170°. The movements of pronation and supination, however, seemed unimpaired. There was marked lateral mobility at the joint. The olecranon was found displaced backward and out of normal relation with the internal condyle of the humerus. Externally it was in relation with a mass of bone over the posterior aspect of the outer condyle. The shaft of the humerus was rotated outward on its long axis and the internal condylar ridge was unduly prominent. The capitellum could not be made out, and the movements of the head of the radius were masked by the outgrowth of bone from the back of the outer condyle.

A diagnosis of probable backward dislocation of both bones at the elbow without fracture was made, and, as the patient was in a helpless condition from the extended position of his forearm, an exploratory arthrotomy was determined upon.

October 29, 1891.—Operation under ether. An Esmarch bandage having been applied and the parts scrubbed and disinfected in the usual manner, the joint was opened by the two postero-lateral incisions recommended by Stimson. The first cut was made over the outer aspect of the articulation and extended from a point about two inches up on the external supracondyloid ridge downward between the external condyle and the olecranon and over the head of the radius, the whole measuring about four inches in length. Through this incision the head of the radius was exposed, also the bony projection from the back of the outer condyle of the humerus. On the lower surface of this process of new bone had been formed a new articular cavity in which the radius rotated freely. This bony outgrowth having been removed with the chisel, the joint was freely opened and the sigmoid cavity of the ulna exposed. This was found filled with firm fibrous tissue which bound it rather closely to the back of the lower extremity of the humerus above. The fibrous tissue was removed with curved scissors and the sigmoid cavity restored. The articular surfaces of the lower end of the humerus were found to be normal. A second incision was then made over the inner aspect of the joint extending downward between the olecranon and internal condyle, exposing the ulnar nerve, which was held aside, and giving free access to the inner aspect of the articulation. The bands of fibrous tissue which held the bones in their dislocated position were divided freely, and reduction of the joint surfaces to their normal relations easily accomplished by traction and manipulation, as much as possible of the lateral ligaments being left undivided.

The wounds were closed with deep and superficial sutures, a good-sized rubber drainage-tube left in the bottom of the inner wound, and a dry dressing applied to the elbow, which was held in a position of right-angled flexion and retained by a right-angled elbow splint. The Esmarch bandage was removed after the dressing was complete and the arm kept elevated for several hours.

On the sixth day the tube was removed and the wounds, which had healed primarily, were dressed dry, and the elbow put up in plaster of Paris in a position of flexion. At this dressing considerable swelling was noticed in the tissues about the joint and the dressings were well saturated with bloody serum. There was no infection, however, the swelling being probably due to the mechanical violence done to the tissues at the time of operation. On November 18th, about three weeks after the operation, considerable oozing having occurred, the plaster splint was removed, the arm redressed, and the patient allowed to carry it in a sling. At this dressing primary union was found complete, except at the drainage-tube opening, and the joint could be flexed through a considerable arc without causing pain, though there was still considerable swelling.

The patient was now given easy passive motion, and after a few days encouraged to perform motions at the elbow himself. Douching with hot and cold water, massage, and, later, electricity to the joint were employed with the result of causing a gradual disappearance of the swelling and a marked increase in the flexibility of the elbow.

At the present time, some five months since the arthrotomy was performed, the painfulness and swelling have entirely disappeared; the patient can use his arm freely and, with the exception of slightly abnormal lateral mobility and some grating in the joint, the function is nearly perfect.

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[*] Read before the New York Surgical Society, May 11, 1892.

[†] On the Treatment of Some Old Dislocations of the Elbow. *N. Y. Med. Jour.*, Oct. 24, 1891.

Flexion beyond the right angle, free pronation and supination, with extension not quite complete, give the patient a very useful joint, and present a marked contrast to the limited arc of motion and general helplessness of the man before the operation.

ON THE
NATURE AND PREVENTIVE TREATMENT OF SEASICKNESS.

By W. W. VAN VALZAH, A. M., M. D.

Nowadays inventive genius and the progress of science have made travel by sea rapid and safe. The great steamers pass quickly and triumphantly against wind and wave from point to point and from shore to shore. The world is made smaller, nation is drawn closer to nation. Seasickness is the chief barrier that remains; it is the almost certain affliction of those who use this mode of travel, be it for health, pleasure, education, or the purposes of trade. This peculiar form of vertigo it is that Neptune imposes as a tax on all of his subjects, except a favored few. It is estimated that only about three per cent. of all sea-goers are exempt.

Mechanical science has very materially shortened the duration of the disease by increasing the rapidity and comforts of travel. The layman has pretty thoroughly discussed the subject, and seems never to tire when considering its humorous side. The medical profession has done very little and written and thought less. It is with the desire to excite serious study of this neglected disease that this article is written. No effort is made to discover "some new thing"; no claim will be made for originality. The united thought of the profession may be able to lift the cloud that obscures the nature of the trouble, and devise some means for its prevention or alleviation.

On account of the nature and limited adaptability of our organism, which is fitted by creation and habit to life on the stable and solid land, on account of the great change in the environment when on the restless sea, it is folly to hope that the evil can be wholly overcome. So long as the rolling and pitching ship is at the mercy of every wave, and, impressing its restlessness on every object that can be felt and seen, takes from us the guides and governors of coordination and of equilibration; so long as these disordering and uncorrected sensory impressions possess correlatives in consciousness, the vertigo of mariners will be produced. For seasickness is essentially and primarily a disordered sense of equilibrium and of space, a sensory form of vertigo.

The symptoms and their order and manner of development confirm this view. The first and essential sign of every case of seasickness is a feeling of dizziness or lightness of the head or vertigo. It is the most invariable and the most persistent, and sometimes the only symptom. It is alone present in the prelude, though overshadowed is never absent from the scene, and is the last to leave the stage when the curtain falls. It is commonly associated with headache, an indefinable nervousness, sensitiveness to light, a contracted pupil, and a keen sense of smell. The temper is extremely irritable, the face is flushed or pale, or rapidly changes from the one to the other state—the vasomotors and inhibition are struggling for the mastery. The condition is one of hyperæmia and instability of the sensory and sympathetic nerve centers. These epiphenomena may be absent and the voyage completed with only varying degrees of vertigo. But more often the simple vertigo is followed by nervous exhaustion and mental depression, muscular inco-ordination and relaxation, a weak heart, low arterial tension, salivation, nausea, and vomiting. The irritability of weakness supplants the sensory excitement, and the vertigo is increased by the cerebral anæmia.

Thus we have three pretty well defined forms or degrees of seasickness—sensory vertigo, sensory vertigo with cerebro-spinal irritability, and vertigo with prostration.

The form and degree and duration of the attack depend on the nature and intensity of the movements of the ship, on the susceptibility and adaptability of the individual, and the incidence of the disturbance. When the cerebro-spinal system is most involved, vertigo, headache, and nervousness are marked; when the sympathetic is weakest, the nausea, vomiting, and prostration are most prominent.

The nervous irritability may be explained as the result of the cerebral excitement and the uncommon and numerous sensory impressions. The cerebro-spinal hyperæmia is due partly to the increase of functional activity and partly to the tonic contraction of all the muscles driving the blood out of the musculo-venous reservoir. Every peripheral excitation determines neural discharges and causes an augmentation of potential energy. It is also well known that the pupil contracts under the influence of exciting sensations, as does also the whole reflex muscular system.

The vomiting, in the popular mind, constitutes the essential part of the malady. Many physicians, it must be admitted, adopt this idea and embody it in their treatment. Now, we would state with emphasis that acute dyspeptic attacks must not be confounded with seasickness. Acute dyspepsia is a powerful predisposing cause of the disease, but has no relation whatever to the movements of the ship. The cause must be sought in overeating, irregular habits, loss of sleep, overwork, worry, anxiety, grief, the abuse of drugs—in some gross violation of the hygiene of digestion. The disturbance of the stomach is primary and would have occurred under similar circumstances on land. The vomiting of seasickness seems to be the effect of the cerebral anæmia produced by the weak heart, vaso-motor disturbance, and muscular relaxation—all due to paresis of the sympathetic from fatigue of the nerve centers by sensory over-excitation, or from emotive shock, or from excessive inhibition through a sense of defective motor innervation and of failure to preserve the equilibrium of the body.

From this analysis it will appear that the symptoms referable to the nervous system are primary and controlling, and that the essential sign of seasickness is vertigo. This then, limits the explanation to the production of the vertigo by the ever-varying and complicated movements of the ship, for all observers agree that this is the remote cause. How is the vertigo produced?

The process is not a simple one. Many theories fall short of the mark because they do not include enough; because it is incorrectly assumed that only one line connects the cause with the effect. It is my purpose to show that the motion of the ship is connected with the vertigo by many routes—that the mechanical cause splits up and reunites in the biological effect. On the one hand we have the movements of the ship, and on the other are the disturbed sense of equilibrium and of space manifest in consciousness as vertigo. How, then, do the movements of the ship disturb these two senses in this peculiar manner?

It is foreign to our purpose to discuss the nature of the sense of equilibrium, whether it be the correlate in consciousness of afferent sensory impressions or a central sense of motor innervation. Nor would anything be gained by disproving the existence of so-called spinal and muscular perception. It is the reality and composition and not the location of the sense of equilibrium with which we are concerned. The sense of equilibrium is a compound one and is correlated in consciousness with many peripheral impressions—muscular, tactile, labyrinthine, visual, and from pressure. Through the muscular we are cognizant of the state and position of a part as related to the rest of the body. By the other sensory impressions we are informed as to the relation of the body to surrounding objects and to the vertical position. Now, the perfection of the sense of equilibrium is dependent on the integrity of the sensory impressions which compose it. When the information is false or falsely interpreted, the motor innervation will be wrong and the result bewildering. When the perception of relations is incomplete and deceptive and uncorrected, there result inco-ordination and unsteadiness and vertigo.

The disordered sense of equilibrium is sufficient alone to produce the vertigo of mariners, for the blind are not exempt. Deafness seems to confer a certain degree of immunity, and closing the eyes will often diminish the vertigo. It is through the sense of sight and the perception of the muscular changes of convergence and divergence and accommodation that the sense of space is built up. Insufficiency and inco-ordination of the ocular muscles often give rise to vertigo. It is through the eye also that we are chiefly made cognizant of our position in space. Where the perceiving subject is in motion, the false perception of relations is projected outward as an illusion of moving objects. The subjective feeling of this disorder is vertigo. The dizziness of high altitudes and openness or void arise from a disordered sense of space.

Vertigo may be divided into three large classes: It may be cardio-vascular, as the vertigo of cerebral anæmia or of arterial sclerosis; it may be of central origin, as the vertigo of properly located brain tumors; or it may be the peripheral or sensory form, of which the vertigo of Menière's disease and seasickness may be taken as a type. We have already stated that the vertigo of seasickness with prostration is partly due to cerebral anæmia, or, in other words, is also cardio-vascular. But the essential and primary vertigo is of a purely sensory origin.

The preservation of equilibrium is dependent on (1) the integrity of afferent impressions; (2) on proper motor innervation guided by past experience, and grouped and limited so as to produce a purposive movement or maintain a definite relative position; (3) on proper muscular response; (4) the result of which is reflected to the co-ordinating and higher centers, and there is appreciated as efficient or defective. When on an irregularly moving body, none of these conditions can be realized, and on board a ship, in a rough sea, the difficulty may be insurmountable. The sensori-motor nerve circuit carries within itself the power of co-ordination without the connection or intervention of the higher centers, though the higher centers may regulate or control. Equilibration is commonly an unconscious process. We are not conscious of all the peripheral impressions which are co-ordinated into vertiginous movements—we merely have a sense of the defective motor innervation. The defect, the discord, the false association, the confusion of relations, are felt as vertigo if they rise into consciousness or are not displaced by a more potent feeling.

With these explanations turn we now to the consideration of the manner in which the senses of equilibrium and of space are disturbed by the movements of the ship as it pitches or rolls or mixes the two motions. The body is constantly thrown out of equilibrium, and the position of the surface which supports it can not be appreciated. The sensations of contact and of pressure ever vary in degree and in direction—now slight as the ship sinks, the individual feeling as if left in mid-air—now great as the ship rises and presses against the descending body. The same uncommon and confusing sensory impressions arise also from the movable viscera and internal sensory surfaces, particularly from the semicircular canals, through oscillations of the endolymph or hyperæmia of the auditory center—sensations associated in experience with other positions of the body than that which it now occupies. No change in movement can be anticipated; no position of the body can be thoroughly made out. The sense of sight can not be utilized to correct and guide—an ever-changing point of view amid ever-changing objects—all the sensory impressions which make up the life of relations are bewildering. The fault does not lie in perception, nor in co-ordination, nor in the periphery—the sensory mechanism works perfectly. It is because the sense of want of support and the other peripherally excited afferent impressions are disordering. It is because new sensations from an environment to which the organism is not adapted obtain a false association in consciousness. It is because relations can not be made out as they really are; because the erroneous inferences as to the relations of the body to objects seen and felt are out of harmony with the other sensory impressions; because the results of the efforts to maintain equilibrium can not be verified. And the central confusion and discord and false association are projected into the outer world as illusions of movement and of space—a simple disorder of relations—a sensory form of vertigo. Such seems to be the explanation of the vertigo which is the cardinal sign or synonym of seasickness.

There are few subjects at once so unsettled and so speculated about as the causation of seasickness. It is not contended that the view here set forth is complete and final. But it is believed to contain the germ of the truth, and is based on the study of the symptoms in the light of physiology and pathology. It best explains all the phenomena, and the cause acting in the manner indicated will produce the vertigo to which, and to the condition of the cerebro-spinal and ganglionic nerve centers, all the symptoms are sequential.

It would be interesting to state briefly and in the order of their publication the theories which at some time commanded the most consideration and credence:

1. It is due to fear (Plutarch), proof of which is that infants who can not reason and animals are exempt (Gerépratte).

This theory is only interesting because it still survives in the pretty widespread belief that the development of seasickness can be influenced or prevented by the exercise of the will and a mental attitude of indifference. Nothing can be more ludicrous than a traveler trying to ward off seasickness by force of will, unless it be a philosopher striving to suppress a toothache or a poet to charm away the gout by the power and sweetness of his song. Strong feelings and powerful emotions can temporarily supplant in consciousness the sensation of vertigo. Animals are not exempt, though they do not vomit. The cause alleged is inadequate, and the evidence is made up of false observation.

2. It owes its existence to sympathy between the brain and peripheral nerves disturbed by the movements of the ship (1756, Gillchrist).

In the early dawn of physiology this is a very shrewd guess.

3. It is due to cerebral congestion and irritation arising from minute concussions of the brain by the fluids of the body during the descent of the ship, analogous to the rise of the mercury as the barometer is dropped (1810, Wollaston).

Minute concussions would produce headache analogous to that from riding a rough horse, but not vertigo. The onset should always be gradual and slow. Slight movements should have no effect. A simple change in the character or cessation of the movements should never remit or inaugurate the trouble. The cause is inadequate, can not be shown to be operative, and the blood-vessels are fortunately not dead, rigid tubes. Infancy, with its soft blood-vessels, and old age, with its hard arteries, are alike almost exempt.

4. It is produced by the influence of the visceral movements on the diaphragm (1824, Jobard and Kérandreu).

Again the influence is inadequate. The symptoms are not reproduced or explained in the order of their development. And fixation of the viscera by an abdominal band exerts only a slight influence by diminishing the peripherally excited impressions.

5. The movements of the ship in an arc-like zigzag line arouse a centrifugal force which so influences the circulation in the aorta as to diminish the amount of blood going to the brain. The anæmia of the brain results in cerebral depression which through the sympathetic invokes vomiting. This author considers the vomiting a conservative process induced to supplement the deficient quantity of blood sent to the head (1847, Pellarin).

This is an exquisite use of "occult influences" and the reputed "beneficent purposes" of Nature.

6. It is intoxication by a marine miasm developed in the decaying animal and vegetable matter of the sea, and aroused from its hiding-place during the agitation of the water by the ship or wind or wave (1850, Sémanas).

If this theory were fresh from a bacteriological laboratory it might command nowadays a great deal of consideration. It was based on a false analogy. But the large doses of quinine recommended may be of benefit by producing anæmia of the semicircular canals (if this condition be true).

7. The proximate cause of seasickness is the heaping of the brain mass upon itself by centrifugal force and subjecting the part to pressure against the bony casement, or to the hurtful centrifugal movements of the cerebro-spinal fluid, which also leave parts of the brain exposed to injury. Preference is given to the latter view (1856, Fonssagrives).

This is a further stage in the development of the mechanical theory, which is fast approaching an absurdity.

8. The proximate cause is hyperæmia of the spinal cord, especially in those segments related to the stomach and muscles concerned in vomiting, induced directly or reflexly by the irritating movements of the brain, spinal cord, abdominal and pelvic viscera, and by jerks on the spinal ligaments. The involuntary muscles are disturbed by the unwonted number of impulses transmitted to them from the preternaturally excited spinal cord (1864, Chapman).

This theory marks the beginning of a new era. A good many threads of truth run like gold through the dark web, and physiology is in an able manner brought to the aid of the old theories of small concussions and mechanical irritations. The treatment by means of the spinal ice-bag does not seem to have increased the comfort of travelers.

9. It seems to be due to the sudden and recurring changes of the relations of the fluids to the solids of the body (1868, Barker).

10. It is due to the disordering movements of the cerebro-spinal fluid, from which results an intermittent anæmia and a certain degree of commotion of the cerebral mass. Children are exempt through expansibility of the fontanelles (1868, Autric).

It does not seem plausible that a force sufficient to cause the fontanelles to bulge would not compress the very yielding blood-vessels of childhood, and children with widely open fontanelles are not always exempt.

11. It is due to the continued action on the brain of a certain set of sensations, more particularly the sensation of want of support (Carpenter, Bain, and (1872) Pollard).

This is a development of the very shrewd guess of Gillchrist. It stands at the beginning of new views. The mechanical theories do not seem to have gone much beyond "possibilities" in their explanation of the symptoms. Experiments, observed order of sequences, and logic now turn on a flood of light.

12. Seasickness is a functional disease of the central

nervous system, mainly of the brain, but in some instances of the spinal cord also, the result of a series of mild concussions (1880, Beard).

The cause is inadequate, and functional disease of the central nervous system is not very definite or lucid. The preventive treatment by bromization, however, was a great advance in therapeutics.

13. Motion produces sickness by disturbing the endolymph in the semicircular canals, the viscera in the abdomen, and possibly the brain and subarachnoid fluid at its base (1881, Irwin).

14. All the symptoms of seasickness can be explained by paresis of the sympathetic (1887, Skinner).

This is a very important factor, but how is the paresis induced? It is an epiphenomenon, and an important indication in the drug treatment.

15. Vertigo and vomiting are the essential symptoms. The movements of a ship in a storm, particularly its quick descent, cause movements of the cerebro-spinal fluid, and cerebral blood is displaced, and the brain subjected to shocks and the cerebellum to commotion; or movements of the abdominal viscera and contractions of the diaphragm, with their resulting local action and reflex inhibitory influences (1888, Pampoukis).

16. The symptoms of seasickness are those of cerebral anæmia. The uncommon and disordering movements that are felt derange and diminish reflex muscular tonicity and contraction, which maintain equilibrium and regulate the return venous circulation. Then results a muscular relaxation, of which the loss of equilibrium is the sign and the cerebral anæmia the consequence (1890, Rochet).

It seems that too great prominence is given to loss or diminution of reflex muscular tonicity. Fatigue is chiefly central, and the most highly endowed and the most differentiated tissue is the first to become exhausted. We have seen that in the production of the paresis of the sympathetic and prostration central fatigue is one of the factors. It seems that muscular relaxation would have to be pretty well marked before there could be much interference with the return venous circulation. And vertigo is present when the pupil is contracted under exciting sensations and the traveler is walking in the dark. The theory makes a deferred result the active cause, but withal is the best explanation yet given.

There are varying degrees of susceptibility to the disease. We have seen how powerful a predisposing cause is acute dyspepsia. The anæmic, the neurotic, the neurasthenic yield very readily to it, as do all who have weak and easily excited nerve centers. Athletes in training have been prostrated, while delicate women were laughing at their discomfort. Infancy and old age are more exempt than middle life. Individuals subject to vaso-motor disturbances are predisposed to the malady. All the symptoms have been often reproduced on land after the lapse of months by association of ideas.

Seasickness is not a fatal disease. Deaths have been recorded as due to it, but in these cases it only caused the already suspended sword to fall. Seasickness is an evil; it is never "very good at times" (Burton), nor "salutary" (Johnson). All the good effects of sea travel are obtained without it. It is a dangerous malady when organic disease of the heart or blood-vessels, of the stomach, or of the nervous system, or of the lungs, liable to be attended by hæmoptysis, is present. It nearly always delays or disorders menstruation, and, as is well known, has often terminated pregnancy. It sometimes persists for a variable period after the voyage, and some never completely recover their sense of equilibrium and of space.

Bad treatment is the natural sequence of false views of causation. When we know how a symptom or disease is produced, the management becomes rational, though not always efficient. To the consideration of the preventive treatment a few practical suggestions will be added on the management of the attack.

In the prevention of seasickness we work along two lines—the removal of the predisposing causes and the diminution of the action of the exciting ones. In each instance we strike at causation, and the effect of the double blow is commonly satisfactory. My attention was first drawn to this method of prevention by the comparative immunity from seasickness of patients who were under my treatment before and during the voyage for some one of the many disorders and diseases of nutrition. So far my experience with the method has not been very great, only a few more than one hundred cases having been managed in this manner. The number of cases is only large enough to suggest rather than establish the value of the treatment. But if it be understood that more than half of these travelers had been previously so sick that they turned with horror from the repetition of the voyage, and that more than three fourths of them completed the passage under the influence of my method without the slightest qualm, and subsequently, when neglecting my directions, became fearfully ill, it may be thought advisable to state the method to the profession with a view to having its utility thoroughly tested.

The treatment as directed to the digestive system has one important object in view—to diminish the irritability of the sensory-nerve endings of the mucous lining of the alimentary canal by keeping the digestive tube functionally active, clean, and sweet, and the consequent prevention of acute dyspeptic attacks. And we follow up the advantage thus gained by securing active elimination and perfect assimilation and disassimilation, thus strengthening and saving from the irritation of an impure blood the nerve centers, whose over-excitation and fatigue play so important a rôle in the development of the malady. In a few words, we strive to promote a high degree of healthy nutrition, because we believe that a strong man is best prepared to resist the encroachments of disease. Good nutrition is a well-fitting armor that turns aside many a deadly blow. If we succeed in realizing this high endeavor, I do not believe that the anæmic stage of seasickness will be developed.

Close attention to the hygiene of nutrition will enable us to get the vital processes on a physiological basis. Only a few days will be required for this purpose if there be but slight disorder of one or more of the nutritive processes.

The week before sailing is commonly one of excitement, dissipation, and worry. All preparations for the voyage should be completed several days before going aboard. The bowels regulated by laxatives, the secretions righted and supplemented if requisite, elimination keep free, and a plain, easily digested, and easily assimilated diet should be adopted. In a general way, the sweets and starches should be limited, and lean meats made the staple food. But the age, activity, peculiarities, habits, the needs of general nutrition, the capability of the digestive organs, must all be taken into consideration in the selection of the diet. The means must be varied to suit each special case, for individualization is the secret of success. But the aim is simple and definite, to secure the perfect digestion and assimilation of a sufficient quantity of food to meet the requirements of nutrition. If the patient gets eight hours of restful sleep every night, and feels no pain nor discomfort nor drowsiness after meals, if there is no flatulency, if the urine contains no abnormal coloring matter, nor excess of phosphates, urates, or uric acid, and the stools are normal—we know that the food is being digested, absorbed, and assimilated in sufficient quantity, if there be no loss of strength to meet the demands of life, and that the excretory products are changed into their simplest and most soluble and most unirritating forms. Until this state of nutrition is established the patient is not prepared for the voyage. The same simple and regular and temperate way of living and eating must be observed throughout the passage.

When there is a serious derangement or disease of the digestive system, the proper treatment must be instituted to secure the one aim of healthy nutrition. How this can be undertaken with the greatest hope of success has been outlined by me in articles published in the *New York Medical Journal.*

The second part of the preventive treatment is intended to diminish the activity of the exciting causes until the organism can adapt itself to the new environment and become inured to the disordering sensations.

During the first forty-eight hours it is advisable to remain in bed and sleep as much as possible. The effort to maintain equilibrium is diminished, the confusion through the sight of moving objects is limited, the life of relations is "cabined and confined," consciousness is diminished at last. Four light meals should be taken a day, and very little fluid drank. The danger of a mechanical hyperæmia of the nerve centers by excessive muscular tonicity forcing the blood out of the musculo-venous reservoir will be obviated. The only drink should be a single cup of hot water with each meal.

After the expiration of this preliminary period, during which the action of the exciting cause is weakened and the organism is being accustomed to the disordering sensations, the time, except that which is regularly given to sleep, should be spent in the open air on deck. The sensory vertigo which is ever ready to arise into consciousness must be supplanted by purposive movements, the efficiency of which can be verified, as walking, etc., and by mental occupation or diversion. It is well known that intense fear or excitement or absorbing thought will dissipate "the swooning sickness on the dismal sea." The vertiginous sensation is driven out of consciousness by the commanding presence of a powerful emotion, feeling, or thought.

A widely known method of diminishing the action of the exciting cause is by the use of the bromide of sodium, which must be pushed to its full physiological effects and the influence kept up during the entire voyage. The neuromuscular disorder is controlled, and sensory perception, both peripheral and central, is dulled. The drug influences favorably the simple vertigo; prevents the development of the hyperæmia; but it intensifies the misery of the anæmic form. The treatment is often efficient, but it should never be tried except on the advice and under the supervision of a physician. Seasickness itself is not so harmful as may be bromization. The large doses usually upset the stomach, and the drug irritates all the organs by which it is eliminated. The bromides when pushed to the point of poisoning often exert a persistent and pernicious influence on the nervous system.

The treatment during the attack is quite different in the anæmic and hyperæmic varieties.

When hyperæmia is present, the influence of the exaggerated reflex muscular tonicity can be diminished by voluntary muscular movements, which require muscular relaxation as well as contraction for their performance. The vertical position is an advantage. A hot foot bath will also draw the blood away from the nerve centers, as keeping the feet in very hot water for some time has produced syncope. A very powerful effect can be produced by placing the hands and feet in hot water and applying ice to the head and spine. Counter-irritation is a procedure of questionable utility. Caffeine will suppress the sense of central fatigue. Antipyrine or bromide of sodium by the rectum may be of some use.

In the anæmic stage such drugs as must be absorbed to produce an effect should be given hypodermically. Atropine is the best drug to stimulate the paretic sympathetic, but nitroglycerin must be given simultaneously to dilate the arterioles. Strychnine and the natro-benzoate of caffeine also meet obvious indications. Ergotin, on account chiefly of its action on the urine, is also valuable. The judicious use and combination of these five remedies will meet the indications from the side of the muscular, nervous, and circulatory systems. Whisky (and food also) may be required by the rectum. The horizontal position, with the head low, should be persistently maintained. The vomiting will also be favorably influenced by the preceding drugs. Copious draughts of hot water to wash out and soothe the stomach is a remedy of very great value. Frequently repeated and small doses of creasote, with lime water and an infinitesimal quantity of ipecac, may be effectual. Oxalate of cerium, in five-grain doses every hour for three or four administrations, is another good remedy. If these preventive precautions and remedies fail, the patient must content himself until he can again get into his element—the place where he was created and educated to live—on land.

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THE REGENERATION OF THE SPINAL CORD AFTER INJURY.

IN the surgical procedure of the present time no region is too sacred for invasion, for the perfection of asepsis and the many precautionary details surrounding an operation nullify the warning "*Procul, o procul este, profani,*" that served in the past to intimidate those that would have liked to make operative incursions upon organs they were taught to consider beyond the goal of surgical interference. In no regions is surgery occupying such an experimental position as in those of the spinal cord and the brain, and all clinical or experimental light bearing on these subjects is of interest to the surgeon as well as to the pathologist.

In a recent number of the *Journal de physiologie* there is a very interesting review of some experiments made by Fr. Sgobbo, that were published in *La Psichiatria*, vol. viii, fasciculi 3 and 4, 1891, regarding the possibility of the regeneration of the spinal cord after partial or complete section. He experimented on forty tritons, ten lizards, thirty tadpoles, twenty frogs, twenty-one pigeons, and fifteen dogs. When section is made in the tail of the triton the cord is regenerated, but when it is made in the back the process of regeneration begins, but is not developed. In no other animal has he succeeded in establishing regeneration of the cord. A study of the movements and an examination of sensibility confirm the anatomical and histological results. The latter, however, in all the animals examined, showed that, notwithstanding the degenerative processes in the gray and white substances, the epithelial cells of the central canal of the cord were in a fair condition for regeneration or remained intact. As it is from these cells that the new cord in the triton is formed, and as the cord has its embryonic origin in that epithelium, it may be concluded that the formation of nervous elements is prevented only by some intrinsic cause—such, for example, as the interposition of connective tissue between the two trunks of the severed cord.

The permanent paralysis following section of the cord in animals observed by Sgobbo in all his cases is contrary to the results of other experimenters. Masius and Vanlair maintained that regeneration occurred in frogs; Brown-Séquard, that he observed it in pigeons and guinea-pigs; and Dentan, in dogs.

Brown-Séquard criticises Sgobbo's experiments, and declares that, if his own experiments are repeated with care and patience, it will be found that the spinal cord may be regenerated as well as a nerve. The principal factor in the care of the paraplegic animals is to clean their cloaca at least twice a day, thus preserving them in a state of health most favorable for the occurrence of the regenerative processes. Brown-Séquard also states that the meningeal sheath should not be completely severed, and that the vertebræ should be as little injured as possible. The cords of the animals upon which he experimented were examined separately by Follin, Lebert, Laboulbene, and Robin, who found reunion with a new production of cells and fibres. He considers that the portions of the cord showing secondary degenerations are so far from essential to voluntary movements and sensibility that they may be profoundly altered without causing manifest diminution of movement or sensibility.

Many clinicians have reported cases of secondary descending degeneration of the pyramidal tract without paralysis, and the posterior columns may be cut in any portion of their length, or be affected with serious ascending degeneration, without entailing a loss of general sensibility, and sometimes without causing loss of tactile sensibility. After citing two cases, the learned and veteran physiologist concludes that, notwithstanding the results recorded, both clinically and experimentally, he would not dare affirm that in animals or in man a complete regeneration of the cord is absolutely impossible. The subject is one of great interest, and the conflicting results of experimenters make the field a desirable one for further investigation.

PROFESSOR OSLER ON SPECIALISTS.

PROFESSOR OSLER, of the Johns Hopkins University, in his address before the recent meeting of the American Pædiatric Society at Boston, made some thoughtful remarks concerning the true basis of specialized medicine. Dr. Osler believes heartily in the specialist who builds up his specialty on the firm basis of a general knowledge of the healing art. His study of medical history shows him that our art began with specialists. The *Papyros Ebers* is largely taken up with specialized practice; and centuries later we find Aristophanes satirizing the rectum specialist of his day in a way not unlike that of our comic papers when they wish to joke about an oculist or aurist of the present day. So that, as Osler wittily remarks, "the tail of the serpent emblematic of medicine is correctly figured as having been returned to his mouth; at no age of the world has specialism been so rife."

But Dr. Osler does not love all who "do special work"; he contemns utterly the ready-made variety of specialist. He regards the latter as an actual detriment to the profession. He says: "A serious danger is the attempt to manufacture rapidly a highly complex structure from ill-seasoned material. The more speedy success that often comes from the cultivation of a specialty is a strong incentive to young men to adopt early a particular line of work. How infrequently are we consulted by sucklings in our ranks as to the most likely branch in which to succeed, or a student, with the brazen assurance that only ignorance can give, announces that he intends to be a gynæcologist or an oculist! No more dangerous members of our profession exist than those born in it, so to speak, as specialists. Without any broad foundation in physiology or pathology, ignorant of the great processes of disease, no amount of technical skill can hide from the keen eyes of colleagues defects that too often require the arts of the charlatan to hide them from the public."

If Dr. Osler's way and the rule by which he has guided his own course could have sway, every specialist would be a classical scholar as well as a thorough all-round physician and surgeon before he considered himself in a position to make a judicious choice as to the special line of practice best suited to his tastes and capacity.

MINOR PARAGRAPHS.

HEPATIC ABSCESS.

Dr. William C. Dabney contributes to the August number of the *American Journal of the Medical Sciences* an article in which he concludes that this condition rarely occurs as a result of injuries or diseases of the bones or other parts of the body, except those directly connected with the portal system of veins or immediately adjacent to the liver. Ulceration of the bowels is a common cause of hepatic abscess, but neither the morbid changes nor the symptoms are those of simple dysentery; the latter is probably amœbic. An abscess may begin two weeks, though usually from four to twelve weeks, from the beginning of the dysenteric attack; and it is impossible to say how long after the latter has occurred all danger of the former is past. Abscesses originating in the bile-ducts and those due to injuries of the liver itself, which usually appear in a few days, seem to be of comparatively rare occurrence. Abscesses occurring in connection with general septicæmia or pyæmia are probably nearly always multiple and small. Aspiration may fail to reveal an abscess, because the needle may not enter it or because the pus is too thick to flow through the needle. There are no means of determining with certainty the presence or absence of adhesions in a given case, though pain, tenderness, and œdema over the liver suggest their presence. Besides the symptoms of the disease just noted, there are fever, dyspnœa, cough, and sometimes jaundice and ascites. It is doubtful whether absorption of the contents of an abscess ever occurs; it usually ruptures into a bronchus or into the pleural cavity. Under expectant treatment death usually occurs without rupture. Free incision and drainage give the best results in treatment, aspiration being unsatisfactory and risky.

THE UNAUTHORIZED USE OF PHYSICIANS' NAMES.

It is getting to be too common for tradesmen to make unauthorized use of the names of medical men in commendation of their wares. Sometimes the offense is carried so far that the injured person is moved to take summary measures to put an end to the outrage. An example has recently come to our notice in which a widely known member of our profession, Dr. Lewis A. Sayre, was concerned. A pharmacist had advertised what he was pleased to term "Dr. Sayre's remedy for dyspepsia." This, of course, was distasteful to Dr. Sayre, and he promptly and successfully took legal means to secure the discontinuance of the pharmacist's course.

A CURIOUS DERMOID CYST.

In the *Virginia Medical Monthly* for June Dr. Stuart McGuire reports the case of a patient upon whom Dr. Hunter McGuire had operated for dermoid cyst of the ovary. Besides two gallons of purulent fluid and hair contained in the cyst, there was a patch of tissue on the interior of the cyst wall growing from which was a penis an inch and three quarters long, together with a pair of testicles; and just beneath these were three large teeth firmly imbedded in gums. The patient was a maiden, aged thirty-five.

FEMALE PHYSICIANS AND THE BRITISH MEDICAL ASSOCIATION.

According to the *British Medical Journal* for July 30th, a resolution was passed at the recent meeting of the British Medical Association at Nottingham, expunging a section of the articles of association that provided that no female should be eligible for election as a member of that association. The question was first agitated in 1878, when it was decided, by a large majority, to make no change. This recent action reflects credit on the association.

DEATH BY LEECHES.

Apropos of our recent paragraph on an attempted suicide by applying leeches all over the body, the *Lancet* for July 30th reports the case of an invalid who went out for a walk at Vallombrosa in the Apennines, and for whom, as he did not return in due season, search was made. He was found in a pit, into which he had fallen, literally covered by leeches. The loss of blood was so great that he died in three days.

THE REGULATION OF PROSTITUTION.

According to the *Union médicale*, 2,941 registered prostitutes were arrested for various offenses in Paris during the year 1891, and only 251 of them were found to be diseased; whereas, among 2,637 clandestine prostitutes arrested during the year for similar offenses, 1,155 were found to be diseased. We commend these facts to those who oppose the official regulation of prostitution.

MARRIED DOCTORS NOT WANTED.

A recent number of the *Union médicale* contains the announcement that a physician is urgently needed in Yonne, and it is added that he must be between thirty and forty years old and either a widower or a bachelor. We presume the inference is reasonable that marriageable ladies abound in Yonne.

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending August 9, 1892:

DISEASES.	Week ending Aug. 2.		Week ending Aug. 9.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	0	0	0	0
Typhoid fever	33	9	41	10
Scarlet fever	53	7	44	5
Cerebro-spinal meningitis	1	1	2	1
Measles	155	22	151	6
Diphtheria	58	27	56	24
Small-pox	3	1	14	3
Varicella	0	0	0	0
Whooping-cough	2	1	0	0

A Proposed Presentation to Sir George Buchanan, F. R. S.—A committee has issued a circular stating that, as Sir George Buchanan has lately resigned the post of medical officer of the Local Government Board, a committee has been formed with a view to forwarding a movement for enabling those interested in public health throughout that country to give expression to the high estimation in which they hold the important work which Sir George Buchanan has done, and for affording some opportunity for the recognition of his conspicuous services in the cause of preventive medicine. Under these circumstances it has been decided to open a subscription list (not to exceed two guineas from each contributor) with a view to presenting to Sir George Buchanan some permanent memento of the esteem in which he and his work are held. The council of the Society of Medical Officers of Health has expressed a desire to be associated with the committee in inviting subscriptions to the fund. Subscriptions may be sent to Dr. W. H. Hamer, Ladywell, 69, Dartmouth Park Hill, London, N. W.; to Dr. J. C. Thresh, The Limes, Chelmsford, Essex; or to Dr. John S. Billings, Army Medical Museum and Library, Washington, D. C.

The Death of Dr. Benjamin W. McCready is announced as having taken place on Wednesday, the 10th inst. He was a graduate of the College of Physicians and Surgeons, of the class of 1835. Several years ago he retired from practice, after a most creditable career. He was one of the most highly esteemed of the physicians of New York.

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from July 24 to Aug. 6, 1892:*

Owen, William O., Jr., Captain and Assistant Surgeon. Leave of absence extended fourteen days.

Woodhull, Alfred A., Major and Surgeon, is granted leave of absence for two months, to take effect on or about August 1, 1892.

By direction of the President, Fitts, Henry B., Passed Assistant Surgeon, U. S. Navy, is assigned, temporarily, to the charge of the Army and Navy General Hospital, Hot Springs, Arkansas, to take effect during the absence therefrom of Surgeon Woodhull, the surgeon in charge.

Munn, C. E., Major and Surgeon. The leave of absence granted for seven days, and extended thirteen days, is hereby further extended three days.

Gardner, Edwin F., Captain and Assistant Surgeon, is granted leave of absence for fifteen days.

Naval Intelligence.—*Official List of Changes in the Medical Corps of the United States Navy for the week ending July 30, 1892:*

Lovering, P. A., Surgeon, ordered to the Marine Rendezvous, Boston, Mass.

Letters to the Editor.

THE HEALTH OF NEW YORK CITY.

Health Department of the City of New York,
President's Office, New York, *August 5, 1892.*

To the Editor of the New York Medical Journal:

Sir: There appears in the *New York Medical Journal* issued July 30th an editorial entitled The Health of New York City. This editorial is calculated to do undeserved injury to the Health Department. The weight that naturally attaches to the utterances of so prominent a periodical, and the fact that the misstatements in the editorial in question may be widely quoted unless corrected at the start, compel me to point out the glaring errors from which the deductions made in the article were drawn.

1. The writer of the editorial states that the total number of deaths in 1891 was 43,695. This is an error. The total number was 43,659.

2. The writer of the editorial holds that the epidemic of influenza could not have increased the death-rate in 1891, because it had already increased that of the preceding year. It is difficult for one to believe that a medical man produced this statement, for every physician knows that the effects of influenza were far more severe in 1891 than they were in 1890.

The following table, taken from the reports of death to the Bureau of Vital Statistics by physicians who attended the cases, shows this fact beyond the question of a doubt:

Cause of Death.	1890.	1891.	Increase.
Influenza	314	854	540
Pneumonia	4,989	5,818	829
Total	5,303	6,672	1,369

These deaths, accounting for more than 38 per cent. of the increase in 1891, are those that can be directly attributed to the influenza epidemic. But there was also a notable increase in other causes of death, which might be indirectly attributed to the epidemic, and which certainly could never be laid to the charge of an inefficient Health Department. For example:

Cause of Death.	1890.	1891.	Increase.
Premature birth	744	799	55
Meningitis	856	932	76
Apoplexy	931	960	29
Heart diseases	1,978	2,285	307
Croup	521	609	88
Diseases of the digestive organs	2,549	2,741	192
Bright's diseases	2,024	2,116	92
Accident	1,449	1,597	148
Suicide	239	300	61
Marasmus, inanition, etc	1,280	1,530	250
Total	12,571	13,869	1,298

The disease called croup is so reported by physicians, and distinguished by them from diphtheria, all cases called diphtheritic croup being classed as diphtheria.

Now, here we have an increase of 1,298 deaths in 1891, widely distributed over the mortality list, accounting, together with the increase from influenza and pneumonia, for 2,667 out of the 3,556 total increase for the year.

The Health Department, surely, can not be held responsible for an increase of 10 per cent. in accidental deaths or 25 per cent. in suicides, although the latter might, perhaps, be charged to influenza.

3. The excess of deaths in 1891 was 3,556, and not 3,592, as stated in the *Journal.* This error is a consequence of the error mentioned in Note 1. Its reappearance here shows that the first error was not made by the printer, but was in the original manuscript.

4. Measles in 1891 is said to have "carried off" 1,663 persons, against 730 in 1890. Here is an error of 1,000, the true number, as given in the Health Department report, being 663, a decrease of 67 from 1890. This stupendous error vitiates all that follows.

The increase in scarlet fever was expected. The records show that an epidemic of this disease occurs in this city at regular intervals of three or six years, as noted in the report. There were such epidemics in 1870, 1873, 1879, 1882, 1888, and 1891, with intervals of three, six, three, six, and three years. This periodicity is remarked upon in Quain's *Dictionary of Medicine* as having been noticed in England. The number of deaths from scarlet fever in 1891 (1,220) was less than in the last epidemic, in 1888—viz., 1,361, and more than 700 less than in the previous one of 1882, when there were 2,066.

The deaths from other zymotic causes, to which the writer refers without taking the trouble to examine them, are given here, the list including all deaths from zymotic causes:

CAUSE OF DEATH.	1890.	1891.	Increase.	Decrease.
Small-pox	2	2	....	....
Chicken-pox	4	6	2	....
Measles	730	663	....	67
Scarlet fever	408	1,220	812	....
Diphtheria	1,262	1,361	99	....
Mumps	6	5	....	1
Whooping-cough	487	352	....	135
Typhoid fever	352	384	32	....
Typhus fever	....	1	1	....
Influenza	314	854	540	....
Cerebro-spinal fever	136	189	53	....
Diarrhœal diseases	3,346	3,587	241	....
Malarial fevers	176	185	9	....
Hydrophobia	1	1	....	....
Malignant pustule	4	0	....	4
Syphilis (mostly congenital)	161	105	....	56
Erysipelas	148	162	14	....
Pyæmia, septicæmia	10	14	4	....
Puerperal fever	208	249	41	....
Others	1	3	2	....
Total	7,756	9,343	1,850	263
Balance	1,587		1,587	

Of this total increase, 812 is due to scarlet fever and 540 to influenza—*i. e.*, 1,352 out of 1,587, leaving a balance of 235 spread over the other zymotic diseases, and more than accounted for by the increase in diarrhœal diseases alone; this total of diarrhœal diseases (3,587) being less than the average for the previous twenty years (3,801), notwithstanding the increased population of the city, while the number in 1890 (3,346) was smaller than for any previous year since 1879 (2,965).

As to the comparison of the death-rate of New York and that of London, it is enough to say that Farr's law (that death-rates vary nearly as the sixth root of the density of population, irrespective of other conditions) accounts for about three per cent. of the difference, and the heat of our summer for at least one per cent. more. CHARLES G. WILSON.

⁂ Unfortunately, the manuscript of the article referred to by President Wilson had been destroyed when his letter reached us, and the writer of the article is not now readily accessible. In justice to him, we wish to state our decided impression that the error of saying that measles had carried off 1,663 persons in the year 1891, instead of 663, the real number, is not justly chargeable to him; we distinctly remember that the numerals in his manuscript were preceded by a comma, which, as it ought not to have been there, we canceled with a stroke of the pen that the compositor may have taken for a figure one. While we hold to the general proposition that the public health should not be given into the charge of mere politicians, we freely concede that the facts in this particular instance, as now correctly brought out by Mr. Wilson, do not in the slightest degree tend to strengthen that proposition; indeed, Mr. Wilson's letter will in itself attest—if anything beyond his entirely satisfactory conduct during his presidency of the Board of Health were needed—his special fitness for dealing with sanitary statistics, whether he is considered a politician or not.

Proceedings of Societies.

NEW YORK SURGICAL SOCIETY.

Meeting of Marsh 23, 1892.

The President, Dr. ARPAD G. GERSTER, in the Chair.

Gastro-enterostomy for Carcinoma of the Pylorus.—Dr. F. H. MARKOE exhibited a German woman, thirty-one years old, of healthy parentage, upon whom he had operated at St. Luke's Hospital for pyloric stenosis. Eighteen months before her entry into the hospital she had been delivered of twins after a severe labor. Her convalescence had been protracted by fever, persistent vomiting, and abdominal pain with marked distention, but no diarrhœa. At the end of three months most of her symptoms had disappeared, but she did not regain her original good health, being frequently compelled to seek her bed on account of vomiting. This had borne no relation to the ingestion of food, having been usually most severe in the evening, when "she vomited everything taken during the day." The appetite had been unimpaired, but there had been progressive loss of flesh and strength. The vomitus had been at times dark-brown, like "coffee grounds." She had noticed for about a year a lump in her abdomen, just below the margin of the ribs on the right side. It had not been particularly sensitive, and had increased but little during the two months preceding her entry into the hospital. The abdomen had been at times more distended than at others, and there had been temporary attacks of slight jaundice, with light-colored stools. Her emaciation and anæmia had been extreme and she had been so weak as to be unable to leave her bed. The vomiting, unaccompanied by nausea, had lately become more frequent.

A careful physical examination revealed nothing, except that the liver projected below the ribs and that a firm, almost insensitive mass extended from its lower surface in the direction of the moderately dilated stomach. This mass descended on inspiration and gave forth a dull note on percussion. The urine contained a trace of albumin. On the day following her admission (August 8, 1891), thorough gastric lavage was performed and much dark-brown pasty fluid evacuated, which contained considerable mucus, fibrinous-looking shreds, and many undigested grape pulps and seeds. The patient was positive that she had eaten no grapes within ten days, and remembered distinctly the occasion on which she had last eaten them. Much relief was experienced and the subsequent day found her more comfortable than for many weeks, the vomiting having ceased. On the fourth day food was withheld for several hours, and, two hours after a thorough lavage, a test meal of tea and toast, without butter, milk, or sugar, was given. After an hour and a half this was siphoned off and found to contain no hydrochloric acid. The patient was weighed at the end of a week, having perceptibly gained, and was found to weigh eighty pounds. Her feebleness was still so marked that operative measures were postponed. During the succeeding month lavage was practiced every few days, and careful stomach feeding, supplemented by nutrient enemata, so improved her general condition that her weight rose to eighty-seven pounds. No further improvement taking place, the patient had been prepared for operation by thorough regulation of the bowels and more frequent lavage.

Median laparotomy, above the umbilicus, was performed by the speaker on September 25, 1891. The mass proved to be the pyloric extremity of the stomach, greatly enlarged, very hard, and somewhat adherent to adjoining structures. The gastric walls were much infiltrated for fully one third of the dilated organ, but the growth stopped abruptly at the gastro-duodenal junction, as pointed out by Rokitansky to be the rule. The tumor was so large and the stomach so dilated as to necessitate a second incision through the parietes, at right angles to the first, involving the left rectus muscle. Pylorectomy, or even pyloroplasty, being evidently contra-indicated, the operator had proceeded to find a portion of the small intestine to approximate to the stomach. A loop had been caught and followed some distance without recognition; the direction of search had then been reversed and a fixed portion identified as the jejunum by lifting the great omentum and transverse colon, after the method of Hahn. About two feet distant from this point a portion of intestine had been selected and brought outside the abdomen. The method of approximation had been but a slight modification of that proposed by Barker, of London. The selected intestinal loop and the anterior gastric wall had been laid together in such a manner that, as Rockwitz advised, their peristaltic waves corresponded in direction, and their serosa was united for a distance of about four inches by a line of continuous suture of black silk. The serosa and muscularis of both organs had then been incised for more than three inches parallel to and about an eighth of an inch from this line, and the now posterior free edges of these incisions united in a corresponding manner by overhand sewing. The mucosa of the stomach had then been opened, and at this point further operation had been delayed until, by means of a large stomach-tube attached to a syringe, a considerable amount of stomach contents had been evacuated. This having been satisfactorily accomplished without soiling the wounded surfaces, the speaker had proceeded, and, after opening the intestinal mucosa for the same distance, had made a continuous circular suture of the gastric and intestinal mucosa. He now had two posterior serous lines of suture and a complete mucous suture. It only remained to complete the anterior suture of the serosa, which was done in the same manner as before. The apposition was thus completed, and consisted of two lines of serous and one of mucous suture, with an anastomotic opening of fully three inches. In order to guard still further against leakage, a portion of great omentum had been wrapped about the line of suture and secured by two interrupted stitches. The organs had then been replaced in the abdominal cavity and the wounds closed by a double layer of suture, a continuous peritoneal of fine catgut, and an interrupted extra-peritoneal of silk, including muscle and skin. The whole operation lasted an hour and fifty-five minutes, the actual time of suturing sixty-one minutes, from which should be deducted ten or more minutes occupied in evacuating stomach contents. At the very close of the operation a stimulating enema of whisky had been given, and, upon the patient's reaching the ward, the foot of the bed had been elevated and the patient surrounded by hot bottles. Pulse, 135. She had reacted perfectly and had passed a fairly comfortable night after a hypodermic of Magendie's solution of morphine.

There had been some slight passive regurgitation of fluid, easily controlled by elevation of the head of the bed and the application of iced cloths to the neck. On the following day milk in small doses, frequently repeated, had been given, but soon discontinued, as it provoked nausea and vomiting. During that evening the stomach-tube had been introduced and about a pint of dark-brown fluid pumped out. The use of milk had again been started a few hours later, but it had not long been retained, and its use had been discontinued for six hours. No further vomiting had occurred. On the eighth day the stitches had been removed and union found, except at one small spot, where the edges had been everted. At the end of the second week the wound was soundly healed.

In the middle of the fourth week she had been allowed to get up and had soon been about. The use of nutrient enemata had been stopped at the end of the first week, and from that time a gradually increasing, selected solid diet had been allowed. She had left the hospital eight weeks after the operation, and had gone to a convalescents' home in the upper part of the city, where her appetite had become ravenous and she had gained rapidly in flesh and strength, her weight soon reaching a hundred and ten pounds. She had been at home since about the 1st of December, and had been free from all discomfort. There had been no hernia. The tumor had increased somewhat in size.

The case had seemed to the speaker to strongly emphasize the statement made by Page, of London, that the operation was capable of bringing relief from the distressing symptoms incidental to pyloric occlusion in cases where pylorectomy was not feasible, and of making the close of life more comfortable, free alike from vomiting and pain.

Colo-colostomy for Annular Carcinoma of the Sigmoid Flexure.—Dr. Markoe's second case was one in which he had performed this operation. The patient had entered Bellevue Hospital on December 30, 1891, and had been referred to the narrator by his colleague, Dr. W. B. James, on February 16, 1892. The patient was an Irishman, fifty-seven years of age, of good family and personal history, who had formerly been a railroad engineer, but had for the past six years worked at burnishing the soles of shoes. During this time he had suffered from mild dyspeptic symptoms, which he attributed to the confinement and character of his work, and the irregularity and poor quality of his meals. For the previous six months his abdominal distress had been more marked, sometimes amounting to real pain, and much increased by the taking of food. There had been little or no impairment of appetite, never any vomiting, and but slight constipation.

On December 28th he had been forced to give up work on account of the almost constant pain and distention of his abdomen. Upon his entering the hospital, nothing abnormal had been found except the abdominal distention. Repeated cathartics and all kinds of enemata had failed to cause movements of any size or to reduce the distention, until about the end of January, when he had had several large movements and the abdomen had subsided. Careful palpation had then revealed a small, hard nodule in the left iliac fossa. At no time had there been any continuous fever; only occasional slight rises above the normal temperature. The patient had remained out of bed quite comfortable until the 7th of February, when the belly had begun to swell, and pain and constipation had returned. No improvement having taken place, he had been sent to the speaker. After the usual preparation, a median laparotomy had been done below the umbilicus, and, on exploring the left iliac fossa, a portion of the sigmoid flexure had been found markedly constricted by a growth in its substance. The whole circumference of the gut was involved for about an inch, and, as a result of this contraction, the intestine above and below was distended. Having found it impossible to draw out the diseased portion through the wound, and that the retroperitoneal glands were involved, the speaker had rejected excision and made an anastomosis between the bulging portions above and below the constriction. The technique of the operation had differed in no respect from that of the last case, the opening having been nearly as large. The lines of suture had been re-enforced by the neighboring appendices epiploicæ. At the end of the eighth day, the wound having completely healed, all sutures had been removed. After two weeks he had been allowed to sit up and resume regular diet. The bowels had moved freely a few hours after the operation and all distention had disappeared. There had been no rise of temperature above 100·8° F., and that only on the day succeeding the operation. The patient at present seemed perfectly well, and all his bodily functions were normally performed.

The President complimented Dr. Markoe on the results he had achieved, and said he thought that surgery was returning to suturing without plates, which he had preferred and had not thought more troublesome.

Enterorrhaphy.—The President showed a patient he had operated upon, with the following history: Edward C., traveling salesman, in February, 1891, had been taken with griping in the right iliac region, accompanied by fever, vomiting, and constipation, which had been relieved by oil and an enema, and had been succeeded by diarrhœa. The attending physician had said it was general peritonitis. At the end of February the patient had had bloody stools. He had been seen by Dr. Hagan and Dr. Burchard, who had diagnosticated an abscess and had advised an operation. Dr. Burchard had operated on March 3d. There had been found extensive necrosis of the colon and a fæcal abscess in the right iliac fossa, which had contained a large concrement. The patient had been admitted to Mt. Sinai Hospital on March 16th, having then a large abdominal incision from which were protruding several coils of intestine, one of these showing a large aperture through which all the fæcal matter was escaping. The skin around the wound was eczematous. After a careful preparation of the patient an operation was performed on August 12, 1891. The speaker first made a lateral incision along the outer edge of the right rectus, some distance from the wound, in order that he might expose and study the relations of the gut. The defect in the gut was found to belong to the caput coli. A silk ligature was applied above and below the defect. On coaptation, it was found that a fair degree of lumen would be preserved, and as the posterior aspect of the colon appeared to be attached to a dense mass of cicatricial tissue, and as there had been a sinus leading down deep behind the colon (where the remains of the appendix were supposed to exist), it was decided not to exsect the gut. The sinus was packed with gauze. The defect of the caput coli was closed by a double row of Lembert silk sutures. The line of sutures was three inches long and ran parallel to the axis of the colon. The exploratory incision was closed with silkworm gut. The wound, within which lay the sutured gut, was packed with gauze and left open. On August 17, 1891, the packing was removed, and the intestinal suture was found all right, but, on withdrawing the deep packing, liquid fæces escaped from the old sinus behind the colon. The wound was repacked. On August 22d the dressings were changed. No fæces appeared, and the edges of the wound were approximated with sutures which had been previously placed *in situ.* On September 26th the patient was discharged, with a small sinus. In November fæces again appeared from the old sinus, but, after a few applications of the cautery, the wound finally closed in February, 1892.

Dr. J. A. Wyeth thought the result had been a good one, as these cases were usually difficult ones for operations. He thought cleanliness and a gradual closing of the wound would cure a good number of such cases after a greater or lesser length of time.

Dr. Charles McBurney said he had reported a similar case, and agreed with the president that cases in which healing was too long delayed should be operated upon. He also thought the free opening of the peritoneal cavity for the purpose of accurately studying the relation of the parts involved often a matter of necessity in order to insure success.

Exsection of the Knee Joint.—The President presented another case in which he had exsected the knee joint on January 22, 1892.

The patient was a German errand boy, sixteen years old, having a tubercular family history. Two years before, without known cause, his left knee had become swollen and painful. A year ago he had gone to the German Hospital, where tuberculosis was diagnosticated and arthrectomy was performed. After a month's stay he had left the hospital seemingly cured, but a relapse had soon become evident. The swelling had reappeared and the leg become acutely flexed. No sinuses were present. This was his condition when Dr. Gerster first saw him. On opening the joint, the ends of both bones were found denuded of cartilage, soft, and degenerated, the remnants of the capsule were much thickened, and the joint was filled with a gelatinous material.

The president showed this case, first, to point out the poor result of arthrectomy, and, secondly, to have an opportunity to make a few remarks about the proper use of the elastic bandage, as many operators had complained of much oozing after its removal. This oozing was invariably observed, and led to unnecessary and often dangerous loss of blood, when the elastic constrictor was removed after the completion of excision and before the wound was sutured and dressed. Some surgeons did this on account of their fear of secondary hæmorrhage, and were actuated by the desire of ligaturing vessels that might have been injured during the operation. As a matter of fact, no important vessels were or could be cut during the proper performance of an excision of the knee, and this premature loosening of the elastic band was harmful, as it led to unnecessary loss of blood. The speaker's routine, practiced for many years, was to finish the excision under artificial anæmia, special attention being paid to the exact and complete removal of the entire capsule and to securing and tying such cut vessels as could be seen on careful inspection of the wound, or became recognizable by "milking" the limb toward the wound, when a drop of blood would be seen exuding from the cut vessel, marking its location. After this the wound was sutured, with the exception of the angles, which were left patulous for drainage, no tubes being used for this purpose. Finally, an ample elastic and compressive dressing and suitable splints were applied, after which the limb was vertically elevated, and, as the *final step*, the elastic constrictor was removed. The limb was kept in the vertical posture until the paling of the toes demonstrated that the hyperæmia following the use of Esmarch's band had vanished. It was remarkable how small the hæmorrhage was under this treatment, and how long the first dressing could be left undisturbed. The dressings were commonly changed in four weeks after the operation.

Tubercular Osteo-arthritis of Both Shoulder Joints.—Dr. Andrew J. McCosh showed a case of tubercular osteo-arthritis of both shoulder joints, which had been under his care for seven weeks. The patient, a woman, was sixty-five years of age, and had had the disease for two years in one joint and eighteen months in the other. In both the tubercular process had been typical. The joint which was most seriously implicated had two sinuses and was partially ankylosed. Six weeks ago the speaker had excised the worst joint, using the ordinary anterior incision. The joint had been found to be thoroughly disorganized. He had cut off the humerus at its neck, had scraped away some dead bone, representing what had been the glenoid cavity, and after cleansing the cavity, packed it with iodoform gauze. The wound had healed kindly. The second joint had not been operated upon. The case was interesting on account of the age of the patient and the involvement of both joints. She had always enjoyed good health; no tubercle was found elsewhere, and there was no specific history.

Epithelioma of the Scrotum.—Dr. F. W. Gwyer showed a case with the following history: A man, sixty-five years old, Irish, had been in this country forty-one years, and was a farmer by occupation. He had had warts on his scrotum for some time. Last June the patient had noticed a growth on his scrotum of the size of a twenty-five-cent piece. This had been treated with caustics and other remedies until the speaker had seen him, in February. The growth had then involved all of the left side of the scrotum, and was accompanied by enlargement of the inguinal glands of the same side. On the 3d of that month the growth and all of the enlarged neighboring glands were removed. The patient was discharged on February 18th cured. The speaker presented the case because of the rarity of the disease in this country. There had been no return of the trouble, but the patient had still a very severe itching of the remaining scrotum, which the speaker would like to know how to cure. Microscopic examination had verified the diagnosis.

Musculo-spiral Paralysis after Fracture of the Humerus.—Dr. L. A. Stimson showed a patient who had fractured his left humerus on November 3, 1889. The man had presented himself at the New York Hospital on January 19, 1890, at which time the speaker had exposed the united fracture and had sutured the nerve and the bone. At the end of eleven months he had sent the patient to Bellevue Hospital with the bone solid, but there had been no return of motion in the muscles supplied by the nerve. He had then excised the fibrous tissues enveloping the sutured portion of the nerve and reunited their severed ends. No improvement had taken place for twelve months. At that time motion had begun to return and had gradually increased. At the present time the patient had very good, though not perfect, motion.

Dr. F. Kammerer wanted to know how long one would have to wait for a return of nerve power. Dr. Stimson did not know.

The President said he had caused several cases of paralysis by applying the Esmarch bandage too tightly. However, all the patients had recovered, although in one instance it had required a period of two years to effect a recovery.

Arterio-venous Aneurysm.—Dr. McBurney presented a patient, twenty-one years old, who, eleven months before, had cut his right thigh on the upper and inner side with a jack-knife. After much bleeding the wound had healed. Two months ago the speaker had seen him and found a tumor, of the size of an egg, seven inches below Poupart's ligament. The tumor had had an expansile pulsation, with a thrill which could be felt very distinctly as high as the groin and as low as the knee. It was clearly venous. Pressure upon the artery at the groin caused the pulsation and thrill to disappear. The tumor was cut down upon and found to be purely venous, and evidently caused by a communication between the femoral artery and vein. The artery was tied above and below, the pedicle of the tumor ligated, and the tumor removed. The speaker thought the point of the knife had gone between the vein and artery and had cut both at the same time. The sac, he thought, had been formed from the vein wall, opposite the communicating opening, by the blood being forced through the opening against the vein wall. The sac was lined with a membrane exactly like the serous lining of the vein.

Dr. Stimson thought the knife had gone through the vein, then into the artery, thus giving rise to a false sac, which might have been lined with a true serous membrane.

The President agreed with Dr. Stimson.

A Contribution to the Treatment of Ureteral Fistula.—Dr. F. Kammerer read a paper thus entitled.

Angeio-sarcoma.—Dr. Stimson showed the specimen and narrated the history of this case. The patient was a man, forty-five years old, who, early in March, 1892, had presented himself at the Chambers Street Hospital, with a painful swelling at the upper and outer side of the right knee. An exploratory incision showed the swelling was due to a collection of bloody serum in the upper outer pouch of the knee joint. A portion of the synovial sac was then removed and given to Dr. Frank Ferguson, who had pronounced it angeio-sarcoma. Dr. Stimson had then advised amputation, but the patient had not consented. Then excision of the joint was proposed, accepted, and done. The speaker had considered the specimen a very rare and interesting one. The growth had involved only the serous lining of the joint. [*July 15th.*—Recovery was uneventful, and as yet there has been no recurrence.]

Gastro-enterostomy; Death.—Dr. Murray showed a specimen from a patient upon whom he had operated on the 10th of March last. The patient, aged fifty-seven, had suffered with dyspepsia for three years, and it was not until six months ago that cancer could be diagnosticated. For the past two months he had lived on liquid diet. The stomach was washed out every day. There was great pain in the gastric region, and the patient was greatly emaciated. The operation lasted an hour. The patient did unusually well until the night of the 21st, when he suddenly had high temperature, cough, and pain in chest, and died on the following morning. The autopsy revealed acute lobar pneumonia in the stage of gray hepatization. The operation had been done according to Dr. Abbe's method, without rings or plates. The specimen showed the complete success of the method, as union was perfect in every particular, and the communication between the stomach and jejunum was three inches in diameter, thus allowing a sufficient aperture for the passage of food. The patient took solid food for forty-eight hours before death, and had no difficulty in digesting it.

Miscellany.

The Address in Bacteriology at the Recent Meeting of the British Medical Association, by G. Sims Woodhead, M. D. Ed., F. R. C. P. E., for advance proofs of which we are indebted to the *British Medical Journal*, was as follows:

Had it been stated twenty years ago that one of the annual addresses delivered before this association would be devoted entirely to a review of the subject, or part of the subject, of bacteriology, such statement would have been received as coming under the category of prophecies not likely to be fulfilled, and, gentlemen, without claiming any very large share of modesty or self-depreciation, I can not but feel that it is to the unexpected fulfillment of this imaginary prophecy that I owe my present position—a position that would be only too eagerly sought after from the honor that its occupation confers on the holder, were it not that the responsibilities placed on the shoulders of the occupant must necessarily weigh heavily enough to interfere most seriously with the full enjoyment of the honor.

Bacteriology, though a comparatively new science, has already made so deep an imprint on the science and practice of medicine that the enumeration in catalogue form of the various facts upon which, according to our present knowledge, the solution of important medical and surgical questions depends, would occupy a much longer time than we have at present at our disposal; it will be my aim, therefore, to indicate very briefly the extension and limitation of the bacteriology of medicine. It may be stated at the outset that in this matter extremists have little claim to be considered, and that, although most thoughtful men maintain that bacteria play a most important rôle in the production of disease, it is equally certain that no claim for anything beyond such important share can be claimed for the most virulent of pathogenic microbes.

Laying aside the question of the relation of micro-organisms to the special forms of surgical fevers, it can not be ignored that a knowledge of the life-history of bacteria and the relation of these organisms to specific infective disease is essential to every scientific student of medicine; so definitely, indeed, has this come to be acknowledged that in all the public-health examinations a knowledge of bacteriology is insisted upon, while in many of our civil and military appointments, both at home and abroad, a fairly intimate knowledge of the theories as to the relations of bacteria to disease is looked upon as constituting an important qualification in the case of candidates presenting themselves.

If, then, the public services are taking up this position, how much more important is it that an important association such as that I have now the honor of addressing should wish to encourage its study by such means as they have in their power. As you, gentlemen, are aware, some of the earliest and best work on bacteriology has been done by some of your research scholars, and many of those who have begun this work under the auspices of our association have made it part of their life work. To mention one only out of many, Mr. Watson Cheyne's accurate work on *The Life-History of the Bacillus Tuberculosis, and on the Special Relation of this Bacillus to Tubercle of Bones and Joints*, forms a most valuable contribution to bacteriology and surgery.

It has been too much the fashion to look upon bacteriology as an art rather than a science. It was supposed that when we had obtained evidence that a definite micro-organism was associated with a specific disease, and that when we had found a means of destroying this organism, or of preventing its access to the tissues, the limits of what bacteriology could teach would be reached. Thanks to the genius of Pasteur, however, bacteriology is now looked upon as a branch of science, the study of which may afford us help in the solution of even fundamental problems in biology; it has assumed such importance, indeed, that into its service have been pressed the general biologist, the botanist, and the pure physiologist; while all who practice medicine and surgery feel that they must at least be conversant with the principles that underlie its study. I know there are some who will not agree with this, and who will tell us that we are bacteria mad; and, while acknowledging that in taking up a new subject there is a danger that we may be led to devote so much attention to it that it might appear that we attach undue importance to it, it must be held that, studied in its broader aspects, it has enabled us to grapple with some of the most difficult questions in medicine. Can an astronomer be accused of narrowness of vision because sometimes he is found looking through the telescope which covers a limited field, and is studying with especial care a small area of the heavens? Which of us can tell of the boundless space and the countless worlds that are opened up by these seemingly narrow studies? The observer collects his data, applies the laws of physical science as at present known, formulates and proves new laws, and opens up and argues on a world so utterly beyond us that his facts to those uninitiated read like the wildest fiction, and his descriptions like poetry and romance.

It would be a waste of time, gentlemen, were I to attempt to trace the history of fermentation, of putrefaction, of septic conditions, and of the relation of bacteria to certain diseases, but it may perhaps be of advantage to insist that there has been a continuous evolution and extension of our theories in regard to the nature of the action and interaction of bacteria on the tissues and organs of the human body. First, there was the mechanical theory, in which it was maintained that death was due to the impaction of groups of micro-organisms in the capillary vessels; then came the theory that these organisms used up the oxygen so rapidly that the tissues received an imperfect supply, and somatic death ensued. Both of these may be partial explanations, but, unless we know how the oxygen is cut off (even accepting this explanation as partially correct), we are little nearer a satisfactory solution of the difficulty. The administration of phosphorus is followed by imperfect oxygenation of the tissues, and fatty degeneration occurs—how this is brought about it is difficult to say; similar degenerations are found in certain diseases set up by micro-organisms. Do such organisms, then, when introduced into the body, act directly by taking up and using for their own purposes the oxygen which would otherwise be applied to the nutrition of the tissues? Do they attack the tissues directly, making their way into their substance, and so devitalizing them that they are unable to perform their functions properly? Do the products formed by these organisms, being thrown out as it were in a nascent condition, immediately lay hold of the weakly combined oxygen in the blood, and remove it so that new compounds may be formed? Do these products act directly on the cells, and interfere with their functional activity? Or, lastly, do the cells when called upon to perform extra work in getting rid of these organisms or of their products—which in either case must be looked upon as foreign bodies—undergo such excessive stimulation that the supply of oxygen is not equal to the demand, so that the functional activity of the cells is in excess of their facilities for nutrition, and their protoplasm undergoes changes described as cloudy swelling, followed by fatty degeneration exactly like those met with in phosphorus poisoning?

At one time it would have been deemed impossible to answer these questions; but as the study of the chemistry of bacteria has been utilized, our information on these points has become more and more definite, and as such definite information has been obtained, it has become possible to indicate some at least of the processes that are going on in certain of the specific infective diseases, and to draw inferences, some of which, however, have still to be put to the proof, as to the methods to be adopted in waging war against bacteria.

One of the most important outcomes of our study of the relations of bacteria to disease is that we have now a pathological chemistry; hitherto physiological chemistry has been elaborated and extended in order that it might be applied to the examination of certain products and excretions met with as the result of diseased conditions of various organisms; but beyond enabling us to make search for slightly modified physiological products, this physiological chemistry has helped us but little. This pathological chemistry has a great future.

I had intended to deal to-day with the subject of antitoxins—that is, substances which are said to be formed when bacteria or their poisonous products are injected into the fluids or tissues of an animal; these antitoxins are said to be the important factors, not in the production of immunity, but in the actual cure of specific infective diseases. As I find, however, that Dr. Sternberg, in a recent address on the practical results of bacteriological researches,* discussing one side of this question, goes into this matter very thoroughly, and gives a short summary of the result obtained in numerous experiments with anthrax, rabies, diphtheria, tetanus, croupous pneumonia, swine erysipelas, and also with ricin (the active poisonous principle in the castor-oil bean), and abrin (the similar product of the jequirity bean), all of which are brought forward to support the theory that wherever a poison is developed in the body, an antitoxin—a substance which is supposed to neutralize the effect of the poison—is rapidly developed, with the result that neither specific organisms nor their poisons can continue to have any effect on the animal host. It must be remembered in connection with this question that many of the experiments made by different observers who have laid claim to the presence of this antitoxin have failed to give results in the hands of other workers. It can not, on this ground only, be assumed that the first results are inaccurate, for all who have experimented with bacteria are only too conscious that the results they have been able to obtain have differed so greatly when the conditions of the experiment have been only slightly modified, that the personal side of the equation in this kind of work, in which we are to a certain extent groping in the dark, must necessarily play an essential part. On the other hand, it should be distinctly understood that until the crucial experiments have been repeated time after time in different schools, and under all known conditions, by all who are determined to obtain reliable data, it is too soon to give a definite opinion.

Allowing that many of the experiments are perfectly reliable, the results obtained by various workers at different diseases have been so contradictory that it may well be asked what is the explanation of such divergences. In the first place, there is not a sufficiently marked line of demarkation drawn between the curative effect of the antitoxic action and the production of immunity; the two are perfectly distinct, though they are too frequently inextricably confounded in respect to the interpretation of experiments. For example, it is quite possible that there may be an antitoxin which will prevent or neutralize the action of the toxin produced by a certain organism when introduced either into a pure culture of this organism or in the body of an animal in which this organism is growing, while this substance may not exert the slightest influence in giving rise to an immunity against the attack of the same organism; while, on the other hand, it is found, as Metschnikoff has recently demonstrated for hog cholera, that the serum from an animal vaccinated against this disease, just as in the case of serum from an unvaccinated animal, allows of a most luxuriant growth of the hog-cholera organism, and that it certainly exerts no antitoxin action when injected into an animal suffering from the disease. On the other hand, when the serum from a vaccinated animal is injected from time to time into the circulation of a non-vaccinated animal, which is some time afterward inoculated with hog-cholera virus, it is found, just as Martin found in anthrax blood similarly treated, that the animal now enjoys a very marked insusceptibility to the disease, while the serum of animals not previously rendered immune to the disease, when injected into non-vaccinated animals, exerts no protective effect, the disease being developed just as in animals previously unexperimented upon.

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* *Intern. Journ. of the Med. Sci.*, July, 1892.

If now we consider that this serum from vaccinated animals serves as an excellent cultivating medium for the growth of the micro-organism of hog cholera, as, too, we find that when sterilized products of a culture of hog-cholera bacillus or the blood taken from an immune animal do not interfere with the action of the special poison when introduced simultaneously into the circulation, it must be concluded that such sterile product does not act directly either on the bacillus or on the poison produced by the bacillus; on the other hand, we find that this same substance introduced into the circulation of the animal undoubtedly exerts a certain protective influence, so that we are compelled to the conclusion that this serum—or rather some body present in it—must act directly on the protoplasm of the cells of the body. Metschnikoff argues that it must act as a specific stimulant, for it is generally accepted that there is a specific protection for most specific diseases. It must be held, too, that a modification of all the cells of the body with which this poison can come in contact may take place, for all these cells are equally liable to be attacked by organisms. It is, of course, not necessary to assume that only the migratory leucocytes are so modified, for although the leucocytes, on account of their motility and powers of migration and emigration, are first called upon to resist the attacks of invading organisms and their products, all the cells—especially those in contact with the circulating fluids—must become modified as they come in contact with the circulating poisons, and thus be gradually inured to carry on their work, even under extremely disadvantageous conditions, for there can be little doubt that they have frequently to help, under special stimulation, to join issue with micro-organisms and their products that have passed beyond the sphere of operation of the leucocytes at the point where the primary invasion occurs. If, too, the antitoxins are present in the fluids of the blood, outside the cells, it must be assumed that for every disease there is a specific antitoxin left in the blood; this, of course, is possible, but, from what we already know of the life-history of the cells, we must go back to the protoplasm in order to trace the origin of this substance.

It is to this ultimate modification of the protoplasm of the cells of the body under the influence of organic or inorganic therapeutic agents that we must look for our future triumphs in the treatment of specific disease where vaccination has not been resorted to, or has failed. Of this direct action on protoplasm there are only two or three examples, but there can be little doubt that quinine and arsenic in malaria, and mercury and perhaps iodide of potassium in syphilis, act somewhat in this manner. In the case of mercury, even the untoward results sometimes attending its exhibition afford evidence of the direct action of the mercury on the protoplasm of the cells, the cells, as it were, becoming exhausted under the influence of the mercury, and so becoming an easier prey to the specific virus.

Should it be definitely proved that antitoxins are formed as the result of the action of certain bacteria on the tissues and fluids of the body, such a method—as at present within our reach—could prove of little practical value in the treatment of disease, for in the cases mentioned, where any definite results have been obtained, very large quantities of the blood or serum from immunized animals have been used in order to obtain the results described, and it is difficult to imagine how it would be possible to obtain sufficient of the antitoxin from living animals, however vaccinated; while the risks to patients would be so great that such treatment would be unjustifiable.

There is one point of view from which we must look at these chemical products quite apart from the organism themselves. One of the theories as to the effect of these chemical poisons in protecting an animal against the attacks of any but the most virulent organisms or of enormous doses of less virulent organisms must, so far as our knowledge goes, be based on what may be called the acclimatization theory, according to which various cells and tissues of the body become so accustomed to the presence of certain poisons when administered in small but gradually increasing quantities at definite intervals, that when large doses are actually formed within the body, the tissue cells are still able to react, to carry on their phagocytic functions, and thus to treat pathogenic organisms as mere saprophytes. Such a consideration as this would at present lead us to classify the methods of inoculation into at least two groups: (1) Those where the tissues have to become accustomed to the presence of a poison only, such as diphtheria and endocarditis, both of which are able to develop only at the surface of the body, where fibrin or some similar substance is so far removed from the action of the cells that the organism is able to grow, produce its poison, and so take up a coign of vantage from which it can distribute its lethal substance, the local tissues being directly attacked, the general tissues being affected by the poison only.

Tetanus might also be included in this group, though here the conditions are somewhat different. Here it may be possible so to acclimatize the tissues (as in the case of hydrophobia) that the poison which, under ordinary accidental conditions, finds its way into a wound would have practically no effect, in which case the organisms introduced at the same time would also be dealt with by the tissues. In the case of diphtheria and infective endocarditis, where an enormous quantity of poison may be formed, and where, as we know, products administered have devitalized the tissues instead of increasing their resistance, the hope of inoculation proving useful does not seem to be very bright though it may be that the introduction of exceedingly minute doses at certain definite intervals may confer a certain degree of protection. Where, however, pathogenic organisms are able to make their way into the lymphatics and blood-vessels, the prospects of obtaining good results from inoculation are much more favorable, as, if once an animal can become accustomed to the presence of the poison, the microbe itself can have little chance with the leucocytes and the tissues.

The two processes, the antitoxic and immunization by specific acclimatization, are perfectly distinct from those on which Koch's treatment of tuberculosis is said to depend for its success. If a certain quantity of a sufficiently dilute escharotic be injected into the skin, slight inflammation is set up, accompanied by exudation of leucocytes, proliferation of the connective-tissue cells, and localized formation of new connective tissue. If, however, a first dose be followed by a second, a second by a third larger and more concentrated dose, the tissues may undergo necrotic changes, a slough is formed, and what is called reaction takes place; the slough gradually separates from the reacting tissues in which connective tissue is formed. This is exactly what takes place when tuberculin is administered; the tuberculin alone is not sufficient to cause any serious damage to the tissues, but, along with the poison that is formed by the tubercle bacilli in the areas affected, it intensifies the necrotic action associated with tubercle, especially in the immediate neighborhood of the bacilli, and in this way the partially devitalized or dead tissues may be got rid of more rapidly than in cases in which no treatment is attempted. Sad experience, however, has taught us that the increased dose of the poison so acts on the tissue in the zone away from actual sloughing, that in some cases at any rate it becomes much more susceptible to the attacks of the tubercle bacilli, and the disease spreads much more rapidly after the administration of tuberculin; and, although it is possible, though certainly not yet proved or even probable, that exceedingly minute doses of tuberculin may have a salutary and perhaps a protecting influence on the tissues, the clinical results up to the present have not been sufficiently satisfactory to encourage the hope that we have in tuberculin a substance that will exert a favorable influence on the course of an attack of tuberculosis.

The influence that bacteriology has had on medicine and surgery is best appreciated when some special process or condition is followed in its ætiology, progress, and termination; in inflammation, for example, the study of bacteriology has revolutionized our conception of the whole subject, and, moreover, has enabled us to bring into harmony theories and interpretations of facts which hitherto have appeared to be diametrically opposed to one another. The various observations made by Virchow as to the changes in the fixed and parenchymatous cells were supposed to put out of court the processes of emigration of leucocytes and changes in the walls of the vessels set forth by Wharton Jones, Waller, and Cohnheim and his disciples. A battle royal waged between those who held that there could be no inflammation without vascular phenomena and those who maintained that these vascular phenomena were merely secondary events, and the difficulty of deciding on this question may be readily imagined when, as Metschnikoff points out, it is borne in mind that in the human subject and the higher animals on which experiments were at first exclusively made, it is impossible to set up any definite irritative changes without calling to our aid traumatism or some form of chemical irritation; and also that in such experimental subjects even the tissues, which in a normal condition are extravascular, have, under the slightest irritation, a tendency to return to their embryonic vascularized condition. It was then found that certain bacteria when introduced into the tissues had the power of setting up rapid inflammatory changes; then the pathologist and the zoologist agreed to ascertain whether changes comparable to those set up in inflammation could be set up either by bacteria or through their irritant products when brought in contact with lower unicellular organisms or with simple organisms in which no blood-vessels are ever developed.

Roser (quoted by Metschnikoff) maintains that inflammation is a disease due to the infection of microbes, and that the phenomena observed in repair are really the result of inflammation, or rather that they constitute those processes that end in resolution or the cure of inflammation itself. At one time such a theory would have been received with ridicule, and even now it is an exceedingly difficult matter to prove that inflammation in many cases is due to the presence of micro-organisms or their products.

It is only by a careful study of the processes described as occurring in lower organisms that we can gain any accurate conception as to the differences set up by mechanical injury and those induced by the presence of micro-organisms. As a result of the various observations made, we have come to look upon inflammation as only part of a series of changes, all of which work toward a definite end—namely, first, the getting rid of foreign bodies, whether organic or inorganic, whose presence might exert a deleterious influence on the tissues in which they are lodged; and, secondly, to repairing the breach that has been left at the point at which these foreign bodies have been ejected.

The soluble products derived from pure cultures of micro-organisms are now known to be composed of a large number of different substances, to isolate which various attempts—many of them unsuccessful—have from time to time been made. None of these have been more successful than those carried on in this country by Burdon Sanderson, Sidney Martin, Brunton and McFadyean, R. W. Philip, Hankin, Crookshank and Herroun, William Hunter, Cartwright Wood, and others whose work, though not so frequently referred to, is still of great value. To no one was this fact more evident than to one whose loss to pathology we have now cause to deplore. I refer to Sir William Aitken, whose death deprives the profession of one whose greatest concern it was to advance and encourage the study of pathological chemistry—especially in the sense in which we are now using the term—among his followers. His address delivered before the Pathological Section of the association at the meeting held in Glasgow was full of suggestion and of the results of research. He had grasped the true value of the subject, and, although in recent years, owing to failing health, he had been unable to carry on original research himself, he was still able to leave the imprint of his mind on the subject that he had near at heart by the encouragement that he gave to younger men, not only by his advice but also by the enthusiasm which he still retained with his ripening experience.

In order that we may focus more accurately—or perhaps one should say, define more rigidly—the nature of the work which has been done in this connection, let us confine our attention to a single disease—diphtheria—in which, owing to the bacteriological chemical methods that have been imparted into its study, we recognize with a moderate degree of certainty, not only that we have to do with a specific organism, but also how it acts.

Loeffler, who first made pure cultures of the diphtheria bacillus, originally described by Klebs, found that, after removal of the microbe from the liquid nutrient culture medium by passing it through a cylindrical porcelain filter and injecting the filtrate into a guinea-pig, he was able to determine not only the same kind of local reaction that was obtained when the organism itself was introduced into the subcutaneous tissue, but that paralytic symptoms, so characteristic of the later stages of diphtheria, also supervened. Then by extracting with a watery solution of glycerin, filtering, and dropping the filtrate into absolute alcohol, he obtained a flocculent precipitate, which could be washed again and again with alcohol without passing into solution. This solution, readily soluble in water, still retained its power of setting up distinct local reaction after being washed, dissolved, reprecipitated, and again dissolved.

Roux and Yersin, accepting Loeffler's statement that the poisonous material appeared to be somewhat of the nature of an enzyme—that is, a ferment associated with the vital activity of a living organism—repeated and extended his experiments. They made observations on the nature of the swelling set up at the point of inoculation by the organisms or by the poisons; they noted that, although there might be congestion and effusion into the serous cavities, evidences of fatty degeneration of the liver and kidney, and characteristic diphtheritic paralysis, no organisms could be found beyond the seat of inoculation. From this they argued that the poison formed at the seat of inoculation must be diffused by the lymphatics and vascular circulation into every part of the body; that it might attack the nervous tissues, especially, apparently, the peripheral nerves, so giving rise to degenerative changes of the nerves and muscles, and of those tissues which appear to be involved in the process of conversion, secretion, and excretion of the poisonous substances.

Their observations are entirely in accord with clinical experience. The degenerations that are met with in the kidney and the liver in cases of diphtheria are essentially similar to those found especially in children who have succumbed to this disease, while the symptoms of peripheral paralysis and the changes in the nerves appear in the two cases to correspond in the most minute features. These observers were convinced that it was some special part of the products of these organisms that gave rise to these symptoms, and they, after various experiments, came to the conclusion that the active substance was not actually precipitated by the alcohol, but was entangled and carried down by the alcoholic precipitate.

Sidney Martin, going a step further, has succeeded in separating definite substances, each of which, appearing to have definite effects on certain tissues and functions, give rise to special symptoms and pathological changes. He has compared their physiological effects with similar or allied substances obtained from anthrax patients and cultures, and from cases of ulcerative endocarditis and tetanus. He found, for instance, that the albumoses—intermediate products between non-dialyzable albumins and dialyzable peptones, substances comparable as regards their structure and chemical reactions to those formed during the process of peptic digestion—could be separated not only from the membrane of diphtheritic patients, but also from the spleen and blood of the same patients, and from pure artificial cultures of the Klebs-Loeffler organism as cultivated by Klein and himself, and that they produced very definite local effects when injected subcutaneously—a condition that was usually accompanied by marked rise of temperature, paralysis, fatty degeneration of certain of the peripheral nerves, both motor and sensory, of the heart muscle, and in a minor degree of certain other organs. These features were observable even when a single dose only was given, but were much more marked when small but frequent doses were exhibited. The marked wasting and degeneration, which in many cases appears to be progressive and continuous, indicates that we have here to do, not only with a direct poisonous action of the albumoses on the tissues that they specially affect, but that there is general interference with the function of nutrition—a condition always accompanied by imperfect coagulation of the blood.

Dr. Martin, who had previously described a powerful alkaloid or organic base in the products of the *Bacillus anthracis*, and in the blood and organs of anthrax patients, was naturally led to look for a similar substance in the diphtheria products; but here, as if to accentuate the difference that may exist between the poisonous substances produced by two different organisms, he found not an organic base, but a substance which he speaks of as an organic acid, as, although it was separable by the same processes as those used to isolate the base or alkaloid, it was found to be acid in character. This organic acid had, however, the same (but a markedly feebler) physiological action as the albumose, also giving rise to nerve degeneration.

In the diphtheritic membrane where, as in ulcerative endocarditis, the organism is growing on coagulated fibrin, a substance which is readily digested by and prepared for the nutrition of the organisms found in these diseases, these albumoses are always found accompanied by an extremely virulent substance entangled in the proteid of the membrane, and precipitated by alcohol. This substance is similar in all respects to the enzyme described by Roux and Yersin. It is attenuated by heat, destroyed by boiling, and is characterized by the same physiological actions as the albumose and the organic acid, extremely minute doses producing very grave symptoms.

Diphtheria, then, is entirely dependent for its specific symptoms on the diphtheria bacillus, experiment corroborating in a most remarkable manner clinical observation. This bacillus does not attack healthy individuals, but where there is slight ulceration of the throat or slight fibrinous exudation on the surface of the tonsils or the posterior surface of the velum palati, diphtheria suddenly makes its appearance. Sometimes the exudation appears to be associated with the local action of the diphtheria bacillus itself, but usually the diphtheritic process appears to be secondary to small patches of ulceration and exudations. Experiment offers the explanation of this fact. The diphtheria bacillus does not appear to have the power of attacking healthy mucous membrane; but when it finds a nidus in coagulated fibrin, it is able to produce its special secretion or enzyme, part of which acting on the fibrin, just as the enzyme met with in the stomach acts on food, rapidly transforms the insoluble and undialyzable fibrin into soluble albumoses, some of which in turn are utilized for the nutrition of the micro-organism, while the remainder of the enzyme and the products of its action on the fibrin, absorbed by the lymphatics and blood-vessels, are carried into the system, where they act on the tissues and organs already mentioned, and, after being broken down into lower molecular combinations in certain organs, are excreted.

It is to the presence of these three sets of products that the symptoms of diphtheria and the changes met with in the tissues are due, and, as Dr. Martin points out, all three sets of poisonous substances may be obtained from pure cultures of the specific diphtheritic organism.

In diphtheria, then, the bacillus is the primary infective agent. It, as a result of its vital activity, produces a powerful enzyme—Martin's secondary infective agent. Part of this enzyme, acting locally on the coagulated fibrin on which the organism is subsisting, converts it into various soluble products known as albumoses; some of the enzyme being absorbed, continues the process of digestion in those tissues and organs in which it is allowed to remain long enough in contact with the proteids contained in the fluids of the body, especially, as Martin points out, in the spleen, through the spaces of which the blood passes extremely slowly, remains in contact with the enzyme for some time, and the albumoses are broken down into much less complex chemical substances, the most important of which in diphtheria is the organic acid, while in anthrax it is an alkaloid or organic base, the less complex organic acid being less virulent than the albumose, while those of still less complex molecular constitution appear to be little more noxious than ordinary effete products.

In anthrax, on the other hand, the semi-final product of anthrax bacillus is the cause of death, the alkaloid exerting a far more powerful physiological action than the intermediate albumoses which in diphtheria act so energetically. It is interesting to note how the definite changes set up by these poisons correspond to those set up by inorganic and organic poisons—such as phosphorus, antimony, and some of the other compounds which induce fatty degeneration through malnutrition, especially by interfering with oxygenation or by increased stimulation of the protoplasm, which—unable to obtain extra-cellular material to carry on its functions under increased stimulation—has to fall back, as it were, on its own protoplasm, which is rapidly converted from proteid into fatty matter. Here, then, with the protoplasm overstimulated and wasted, and with the products still present in the blood, the process of wasting becomes more and more profound; owing to the previous wasting, even normal stimulation is now excessive; the degeneration may go on even after the poison has been removed, and ultimately the patient may die of failure of certain organs when all danger from the direct action of the poison appears to have disappeared. We now know that in the case of the microbes of pyocyaneus, hog cholera, tetanus, tubercle, and some other diseases, the poison is actually combined with the protoplasm of the micro-organism, and it is quite possible that in these cases of "marasmus" it may continue to be given up for long after the organisms themselves are dead, thus keeping up irritation and stimulation of the protoplasm; the condition of "marasmus" continuing after the microbes are dead, and therefore, as was at one time supposed, innocuous.

Bacteriological chemistry thus supplies another diagnostic factor in the detection of specific infective disorders. Martin points out that to Koch's four cardinal rules a fifth—that is, that the secondary infective agent, the chemical poison separable from the tissues in the natural disease, should exert a definite physiological action, and that this should be similar, both chemically and physiologically, to the products obtained from a pure artificial culture of the primary infective agent—the micro-organism. Specific chemical differences may not always be present, but, by combining what we know of the chemistry of these products with their physiological or pathological action, we may still be able to determine how far a disease is specific and how far therefore it is due to the presence of a primary infective agent. By the assistance of the above factor it may be possible to unravel the ætiology of certain disorders which up to the present have defied the most pertinacious efforts of the pathologist and bacteriologist.

But, gentlemen, it is not within the reach of every one engaged in general practice to make chemical examinations; though, from the lucid way in which some of our recent workers have set forth their methods, it is a comparatively easy matter to carry on the first stages of the processes from which the expert may continue the research. It is possible, however, as Roux and Yersin have pointed out, for every one engaged in attendance on patients in whom the presence of diphtheria is suspected, to settle the question for themselves, and to gain information not only for their own guidance in the treatment of the case, but also for the use of the medical officer of health, whose duty is often rendered difficult, if not unpleasant, where there is any doubt as to the diagnoses in such cases. And I should here like to suggest that the Society for the Advancement of Medical Research, which has already done such valuable work, not only in encouraging but also in controlling research, might undertake to assist in this matter.

Roux and Yersin found that if they removed part of the diphtheritic false membrane by means of a platinum needle flattened at the end to form a kind of spatula, passed the same needle without recharging over the surface of a series of layers of specially prepared blood serum, and incubated at from 33° to 35° C., the diphtheria bacillus is the only micro-organism usually met with that makes its appearance within twenty hours. Colonies visible to the naked eye as small rounded grayish-white points (the center of which, owing to the somewhat greater thickness, is more opaque than the periphery) are then seen; so rapid is the further growth of these colonies that they are large, well-developed disks before any other organisms form colonies at all visible to the naked eye. From these first colonies pure cultures may be readily obtained, and may be examined at once or sent to some expert bacteriologist. The appearance and rapidity of the growth alone are quite sufficient to justify the medical attendant of the case in a decision that he is dealing with diphtheria, information which can not be obtained by ordinary methods of diagnosis, especially in those very doubtful cases where the patches are comparatively small and ill defined.

Quite recently Dr. Sahkaroff has utilized the boiled white of egg as culture medium for the diagnostic purpose. He takes a boiled egg, removes half the shell with care, and with a knife that has previously been heated cuts from the surface small strips just large enough to go into a test tube, which may be sterilized by heat in the following manner. Put two thirds of an inch of water into a test tube, plug the opening with cotton wool, and allow to boil briskly over a spirit lamp or Bunsen flame. As soon as a little more than half of the water has boiled away, put aside to cool, and the egg is placed in the tube. Cultures are made as on the serum, and incubated at from 35° to 38° C., and at the end of twenty-four hours small grayish growths, from which cultures or cover-glass preparations may be made, appear on the glistening surface of the coagulated albumin. This method may not be quite so accurate as the serum method, but it is so easy to carry out that it should prove invaluable as a diagnostic aid in doubtful cases of diphtheria

The Association for the Advancement of Medical Research might, I would suggest, if properly supported by the profession, undertake to supply media of various kinds to those who wish to engage in this kind of work, for, although it is entirely a matter of money at present, we can not but feel that the small subscription required (if a large number of members of the profession would take this in hand) would be ample to enable such a scheme to be carried out, and, moreover, although I don't see how the conjoint colleges could be expected to do more than they have done in making it easy for research to be carried out in this country, I feel sure that if any matured scheme, backed by sufficient funds to pay for a couple of young men who, with slight training in experimental work, would be able to prepare and do the rough examination of material, were placed before them, they would not be unwilling to place some accommodation at the disposal of the society in order that the scheme might have a fair chance of being successful. Beyond this, however, a retaining fee might be paid to certain experts whose duty it should be to give reports on specially interesting cases. At present there is no organization or centralization; specimens, badly preserved, are sent up in a haphazard way, accompanied or followed by a note to the effect that it is hoped that the person to whom they are sent will examine and send a report. If the expert happens to be interested in the special subject he will make a very thorough examination, and will forward a report sooner or later; if he is not, there are ten chances to one that the specimen will be left until he has sufficient leisure without it interfering with his own proper work, and (as young men of our profession are, as a rule, not endowed with too much of the good things of this world) they are usually so occupied with their own work and with trying to make both ends meet, that the examination is put off to the Greek Kalends. If, however, men were specially retained and paid a moderate fee for each investigation, they would be eager to do the work and would feel that they were not neglecting their own interests or the interests of those depending upon them, and those for whom the examinations are made would have far less reluctance in sending specimens for examination did they but feel that they were taking up no one's time without making some adequate return. Not only so, but an investigation for which a fee is charged is always of more value both to practitioner and patient than an examination—done in the leisure moments of a friend or acquaintance—for which no charge is made.

I should not have mentioned this matter did I not believe that pathology suffers very greatly from the want of some such organized plan of work; it is not a matter which any private individual can take up, but it is one that the association mentioned—especially if backed up by a grant from this association—might prove of enormous value to the profession at large. It would, of course, be necessary to make a fixed charge for each examination, the charge varying with the nature of the work, but it might be that every subscriber of a guinea and upward per annum should have the privilege of having his examinations made for half the tariff price.

It is fitting that at a meeting of medical men, whose aim is the advancement of science, some slight attempt should be made to show that one of the greatest advances in the history of bacteriology has been initiated by members of this association. It is only recently that, in going over the literature of this subject, have I come to a knowledge of the exact state of matters, and as, although I was constantly associated for eight years with my friend and master, Professor Greenfield, he never once mentioned his claim to what I look upon as justly his due in connection with the preventive inoculation of anthrax.

Duguid, as reported by Burdon Sanderson in 1880, had observed in 1878 that, when splenic disease is transmitted by inoculation from cattle to small rodents, such as small guinea-pigs, and then back again to cattle, the character of the disease so transmitted is much milder than that of the original disease acquired in the ordinary way; the rodents die, but the bovine animals inoculated with their blood or with the pulp of their diseased spleens recover. There seemed to be little doubt at the time these experiments were made that the question as to the attenuating effect of passing the *Bacillus anthracis* from a cow to a guinea-pig had been settled, though, from the fact that cattle appear to be much less easily affected by direct inoculation than they are to the bacillus when introduced by the alimentary tract, doubts have been expressed as to the real value of these experiments, as, although the same anthrax when passed through a series of guinea-pigs appeared to have its virulence diminished, there was not sufficient proof given that the attenuating influence existed, extended to those cases where feeding experiments were conducted. These doubts, however, can not detract from the value of the observations done, as they were at so early a period.

In view of Pasteur's success in the production of an attenuation of the microbe of fowl cholera, this appeared to give promise of successful results in the production of immunity against the attacks of anthrax. In May, 1880, Greenfield, who at the Brown Institution had made careful cultivation and inoculation experiments on the anthrax bacillus, announced, in An Inquiry into the Nature, Cause, and Prevention of Splenic Fever, Quarter Evil, and Other Diseases, that he had been able by artificial means to prepare a protective anthrax virus.*

After referring to Duguid's experiments and the results obtained by the direct method of inoculation, Greenfield says: "Seeing that the object of my experiments was to inoculate bovine animals with a virus modified by its transmission through the guinea-pig, it may appear that it would be desirable, in order to have the full effect of such modification, either to inoculate directly from the guinea-pig or from a cultivation not far removed from it. But there would be many practical advantages if it were found that, having once transmitted the virus through one guinea-pig or a series of them, its modified property was subsequently maintained in the artificial cultivation. I have therefore kept this in view, and have tested the effect of successive generations of the artificially prepared poison." And he further says: "It would have been a great advantage if I had been able to test, side by side with these cultivations derived from the guinea-pig, other cultivations derived direct from a bovine animal. But in every case cultivations from the latter have failed, owing to the commencement of decomposition in the material sent to us."

Using an infusion of the hay bacillus, or aqueous humor of the sheep or ox, more especially the latter, Greenfield made his cultivations in closed glass tubes, about a quarter of an inch in diameter, drawn out at both ends to a fine capillary tube and sealed. These tubes, about an inch in length and half filled with cultivating fluid, were carefully inoculated with a capillary tube containing a minute quantity of the blood, or only rubbed on the spleen of the animal which had died of anthrax, were sealed immediately after inoculation and kept at a temperature of about 35° C.

After carefully describing five experiments made on cattle and sheep, in which the results were certainly most satisfactory, Greenfield says: "It must be evident to any one who considers the matter that there are many points which must be determined by experiments of a much more extensive character than any I am able to carry out at the Brown Institution. If, as I hope, it should prove on further experiment that the earlier results are confirmed, and that the inoculation of bovine animals with the *Bacillus anthracis* cultivated artificially after transmission through guinea-pigs or some other animal serves to render bovine animals totally or partially insusceptible to the disease when transmitted by the usual channels, one great step will have been taken. But there will yet remain the questions: Is the mortality from inoculation by this method a high one, or do even a small percentage of animals die? What are the conditions under which inoculations may be best performed, and does age exercise an important influence in the fatality? And, lastly, for how long a period is protection from attack conferred?

"To settle these points the inoculation of a large number of animals will be necessary, and their subsequent exposure to sources of contagion at favorable periods."

These facts and statements, taken in conjunction with the observations published in the *Proceedings of the Royal Society* for June of the same year, make it evident that in his serial cultivation experiments, during which he obtained attenuation of the virus, Greenfield's object was to obtain a vaccine which, when inoculated, would induce a milder but protective attack of the disease with which he was dealing, and whatever fault may now be found with the method used, and it must be remembered that at this period bacteriology was an almost new science and the methods were only in process of development—he obtained the results at which he was aiming.

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* Vol. xvi of the *Journal of the Royal Society of England.* (I mention this paper because it was published rather earlier than the note in the *Proceedings of the Royal Society*, and because the evidence there given as to the success of this method is far more complete and satisfactory than that contained in the latter paper.)

It has often been stated that the results obtained by Greenfield could not be relied upon as accurate, but these arguments are not based on his experiments or on those carried on in the way that he described, but on various modified experiments. I have therefore thought it necessary to repeat a number of his experiments, following his directions as accurately as possible, and as a result I have found that although I am not able to agree with all the interpretations put on the observations, the main facts themselves are unassailable, especially as regards the modification of the appearance of the organism under cultivation in the media mentioned.

At the time that Greenfield was obtaining his results with cattle, Toussaint was working away on young dogs and sheep, and in July, 1880, he described the results that he had obtained on these animals, and a little later he gave his method of preparing the attenuated virus with which he protected animals against the action of a virulent anthrax.

In connection with Toussaint's experiments Pasteur, than whom few men have been less rash in drawing conclusions, was satisfied that his method of preparing vaccine was valueless; but Roux, an exceeding accurate and careful observer, a disciple of Pasteur, repeating Toussaint's experiments, corroborated the results, as he found that his earlier experiments, published immediately after those of Greenfield, were to be relied upon, and that although the bacilli were destroyed at 55° C., the spores remained alive, and, what was more important, their virulence was attenuated.

Owing to the conditions under which scientific work must be carried on in this country, and to the comparatively slight interest that is taken in these matters by our wealthy classes generally, and owing to the restrictions that were placed upon the most necessary experiments, Greenfield was unable to test on a large scale the value of his observations, but he had laid the foundation of what was ultimately to render it one of the greatest discoveries in modern medicine, and there can be little doubt that Wooldridge, in working out his admirable and epoch-making researches on protective inoculation, was following and extending these original researches carried on in the Brown Institution.

In saying all this, I am not detracting in the slightest from the brilliant work done by M. Pasteur, who, thanks to the results that he had previously obtained in other departments of research, was able to command the opportunities of carrying on work on a most extended scale; and his results, published in May, 1881, may be said to be an edifice built on a triple foundation of his own work on fowl cholera, and that of Greenfield and Toussaint on anthrax; for although, as Pasteur pointed out, fallacies had crept in which the earlier workers had not been able to eliminate, theirs was the rough pioneer work which opened up a new country, cut rough and often circuitous roads, making possible the advance of those who were to build and elaborate the work that is now being done.

There is an old fable that when truth was sent by the gods, owing to some mishap it fell from the clouds of Olympia to the hard, matter-of-fact world below, and in the process was smashed into a thousand atoms. Not only had truth been beautiful in itself, but the shattered fragments still retained so much beauty of form, color, and material, that each became the desire of those among whom it fell. In the general scrimmage that ensued, many took part, and some were successful, each bearing away in triumph his small fragment, he and his friends fondly imagining that it represented the whole beautiful image. Gentlemen, the first step toward reconstructing this image is for each one to acknowledge that his fragment is but part of a great whole; when this is done, let each bring his own fragment, be it large or small, and submit it for examination and measurement, and to be fitted by himself and by others. From time to time, men of deeper and wider views, capable of fitting together not only their own fragments, but those of others that have been prepared to their hands, come forward, and the original form is being daily further and further outlined. We are now but gathering and combining the smaller fragments into larger pieces, and it may be that in this finite existence of ours we shall see the limbs or joints merely, but through the association and working together of many, all animated by the same desire, these smaller fragments will be gradually fitted together, so that we may gain some conception, however crude, of the wonderful form that men describe as truth.

Reversal of the Child's Position during Birth.—Dr. Charles A. Kinch sends us the following: Mrs. B., aged forty, a primipara, was in labor for ten hours. In the first stage the head was found presenting in the left occipito-anterior position. The fœtal heart was heard to the left of and below the umbilicus. Rotation was normal, and after restitution the child's occiput was in front of the mother's left thigh. The pain succeeding the birth of the head forced the left shoulder from the posterior part of the vulva. The child's face then turned around backward through a complete semicircle, and the right shoulder was also extruded from the posterior commissure. The hips were born with the sacrum to the right acetabulum. Dr. James L. Kortright, Dr. Kinch adds, reported a similar case, in the *Medical Record* for April 19, 1890, in which the reversal of position took place before the birth of the shoulders.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

THE NEW YORK MEDICAL JOURNAL, August 20, 1892.

Original Communications.

FORMATION OF GLYCOGEN AFTER TAKING DIFFERENT VARIETIES OF SUGAR.

AN ABSTRACT.[*]

By GRAHAM LUSK, Ph. D.,
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There are two theories regarding the formation of the curious substance called glycogen, which is found deposited in various organs of the body, and especially in the liver cells.

According to one theory, known as the "anhydride theory," dextrose and those sugars which are changed into dextrose in the intestinal canal are transformed into the anhydride of dextrose or glycogen by the activity of the liver cells. This theory arose because large quantities of glycogen were always found in the liver after feeding dextrose, lævulose, and cane sugar.

The second theory maintains that the glycogen is derived from the continually decomposing albumin. So long as no sugars reach the blood from the intestinal canal, this glycogen is swept away by the blood current as soon as formed and contributes to fulfill the conditions for combustion in the cells. When, however, sugars are introduced into the blood, they burn in preference to the less easily decomposable glycogen, and hence the glycogen accumulates in the organization. The more easily combustible sugars protect or "economize" the less combustible glycogen. This, then, is the "economy theory."

Wollfberg especially showed the economy theory to be true in certain cases. Experimenting upon hens, he found, on feeding to them a constant amount of carbohydrates with varying amounts of albumin, that the glycogen stored in the liver increased with the amount of albumin given. The principal proof apparently emanated from Luschinger and others, who showed that chemically the glycogen was always the anhydride of dextrose. Maydl asks how a ketone (lævulose) can go over into an aldehyde (dextrose).

At one time there was general acceptance of the "economy theory." Sugar burned most easily, glycogen next, and fat with the greatest difficulty; hence sugar economized the glycogen formed from the decomposition of albumin, while glycogen burned in advance of the fat. Therefore we see why ingestion of the less combustible fat does not affect the amount of glycogen stored.

In the students' exercises held by Professor Voit, it has been customary to feed rabbits, which had been starved several days, with a large quantity of sugar (sixty grammes of cane sugar in solution), and, after eight hours, to kill the rabbits and demonstrate the glycogen in the liver. The amounts found varied from four to nine grammes, and ran as high as twelve per cent. of the fresh, or forty per cent. of the dry, substance of the liver.

The possibility of producing so large a quantity of glycogen in so short a time brought up the question whether this large amount could have been produced from the decomposition of albumin during the same eight hours. Erwin Voit fed a goose for five days on rice, and the amount of glycogen found in the liver at the end of the experiment proved to be three times greater than what could possibly have been derived from the albuminoid decomposition of the whole five days. Some of the ingested carbohydrates must have been changed directly into glycogen. Here we have a proof of the anhydride theory, but by no means a refutation of the economy theory. Indeed, Külz has indisputably shown that glycogen could be produced from albumin. We see, therefore, that the ingested carbohydrates first "economize" the glycogen produced from albumin, and afterward, when present in large quantities, are themselves directly changed into glycogen by a process of dehydration. The truth of both theories, then, seems to be established.

These facts cause us to consider (1) what kinds of sugar are directly convertible into glycogen, (2) what kinds merely "economize" the albuminoid glycogen, and (3) why it is that one and the same glycogen is always produced, even after the ingestion of the most varied kinds of sugar. Professor Voit therefore instituted feeding-experiments with dextrose, cane sugar, maltose, lævulose, milk sugar, and galactose. The animals fed were rabbits and fowls. They were starved from four to six days, when the amount of glycogen in the organization seldom exceeds unweighable traces. Then, eight hours after ingestion of the sugar solution, the animal was killed and the liver treated for analysis.

Kind of Sugar.	Weight of glycogen in liver.		Per cent. of glycogen in liver.	
50 grammes dextrose, fowl (Otto)	5·37	7·3	15·3	16
80 " " rabbit (Otto).....	9·27		16·8	
60 " cane sugar, fowl (Otto).....	4·94	5·5	13·3	10
55 " " rabbit (Otto)...	4·35		7·4	
60 " " " (Otto)...	8·50		12·0	
30 " " " (Lusk)...	4·06		6·5	
51·8 " lævulose, fowl (Otto)	3·99	4·6	10·5	10
54·8 " " rabbit (Otto).....	5·27		9·1	
60 " maltose, fowl (Otto).......	4·07	4·1	10·4	9
60 " " rabbit (Otto)......	4·13		8·1	
55 " galactose, fowl (Otto).....	0·67	0·8	1·3	1
68·2 " " rabbit (Otto)....	0·87		1·5	
32 " milk sugar, fowl (Otto).....	0·12	0·8	0·2	1
48 " " rabbit (Otto)...	0·87		1·7	
32 " " " (Otto)...	0·14		0·4	
.. " " " (Otto)...	....		0·9	
50 " " " (Abbott).	....		0·7	
50 " " " (Abbott).	....		1·2	
50 " " " (Abbott).	....		1·5	
50 " " " (Lusk)...	2·18		3·6	

Experiments made by various authors show that in a starving rabbit the amount of glycogen possibly obtainable from eight hours' decomposition of albumin can not exceed 0·66 to 1·52 gramme; in the case of fowls, 0·19 to 2·29 grammes. Amounts of glycogen, therefore, which do not overstep these limits can be attributed to the albumin and not to an ingested material.

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[*] Ueber die Glycogenbildung nach Aufnahme verschiedener Zuckerarten. Nach den Versuchen der Herrn Dr. Jac. G. Otto aus Christiania, Dr. A. C. Abbott aus Baltimore, Dr. Graham Lusk aus New York, und Dr. Fritz Voit aus München. Zusammengestellt von Carl Voit. (Aus dem physiologischem Institut zu München.) *Zeitschrift für Biologie*, vol. xxviii, p. 245, 1892.

Also, *Ueber die Glycogenbildung bei Aufnahme verschiedener Zuckerarten.* Von Graham Lusk. Dissertatio inauguralis. München, 1892.

The preceding table shows the amounts of glycogen we found after ingestion of the various sugars named.

A review of the above table demonstrates indisputably that large doses of galactose and milk sugar bear an entirely different relation to the formation of glycogen to that exhibited by dextrose, cane sugar, lævulose, and maltose. The latter four produce glycogen in large amounts, whereas the amount produced after feeding with milk sugar and galactose is so small as to be derivable from the decomposition of albumin. Not only our investigations, but likewise those of Külz, confirm these same relations.

How, then, are we to explain the large quantity of glycogen found after feeding dextrose, cane sugar, lævulose, and maltose? Perhaps the last-named three are transformed into dextrose in the intestinal canal. It has long been known that large quantities of sugar ingested produce an excretion of sugar in the urine, and from the variety of sugar excreted we may form some idea of what has gone on in the body. We therefore turn to the consideration of the behavior of the different sugars in the intestinal tract and their emission in the urine.

Cane sugar certainly is transformed, in part, into dextrose. Professor Voit has for thirty years shown in his lectures that a 0·3-per-cent. hydrochloric-acid solution at the body temperature quickly changes cane sugar into a mixture of lævulose and dextrose—*i. e.*, invert sugar. Certain ferments have the same action. The writer once gave a rabbit sixty grammes of cane sugar and killed the animal six hours afterward. He found twenty times more invert sugar than cane sugar present in the intestines. Hence we may conclude that a considerable amount is absorbed as dextrose. Because much cane sugar is found in the urine, it by no means proves that all the ingested cane sugar is absorbed as such; it could easily be that cane sugar is less readily burned, or, one may reason, that perhaps it may not be converted into glycogen, and in this way be removed from the circulation. It is probable that the greater part of the cane sugar is absorbed as invert sugar, from which the glycogen is manufactured.

Lævulose remains unchanged in the intestines, is absorbed as such, and in extreme cases is emitted in the urine (Otto, Fritz Voit). The lævulose given was nearly pure, and destructible by boiling with ten-per-cent. hydrochloric acid. In the intestinal contents, and in the urine of the animals experimented upon, the sugar found was equally so destructible. Dextrose would not have been destroyed.

Maltose is, with dextrine, a product of the action of dilute acids on starch paste, which action, if prolonged, yields dextrose. Certain ferments have the power of changing starch into maltose and dextrine, and then finally into dextrose. The pancreatic and intestinal juices possess this power to a high degree. Maltose, therefore, is transformed into dextrose in the intestinal canal.

Galactose is probably absorbed unchanged.

Milk sugar, like galactose, produces no large amount of glycogen, and hence it was inferable that it did not break up into a mixture of dextrose and galactose (into which constituents it can be converted by treatment with acids). If the decomposition did take place in the intestines, then the dextrose formed must ferment with yeast, and our investigations are based upon this fact. Dr. Abbott made the preliminary experiments, and, with great diligence and patient labor, devoted himself to the solution of the problem. In his experiments he used the ordinary commercial yeast, and noticed that the solutions obtained from the intestines treated with this yeast rapidly decreased in their percentage of sugar, and after a few days the whole of the sugar had disappeared. The results were at first apparently inexplicable, but the cause was the presence of foreign bacteria (probably lactic fermentation). Some months after the unavoidable departure of Dr. Abbott from Munich the writer took up the subject, using a culture of pure yeast (*Saccharomyces apiculatus*). The result of the investigations was to establish the fact that milk sugar undergoes no change in the intestines, and is emitted unchanged in the urine.

It is evident that cane sugar and maltose form dextrose in the intestinal canal; that lævulose, milk sugar, and probably also galactose, do not form dextrose, but are absorbed unchanged. But ingestion of lævulose produces a large store of glycogen in the body. Hence, not only dextrose is converted into glycogen, but lævulose must also undergo the same change.

Now, if cane sugar and maltose form glycogen only in virtue of the fact that the intestines change them into dextrose, by excluding the factor of the intestinal tract they should not produce glycogen. The factor of the intestinal tract could be obviated by subcutaneous injection, in which way we were able to bring considerable amounts of sugar into the circulation. Then, again, lævulose, milk sugar, and galactose, when introduced by subcutaneous injection directly into the tissues of the body, should form glycogen only in the event that the liver itself has the power to turn them into dextrose.

These experiments consisted in the subcutaneous injection of the different sugars, and were performed by the writer upon starving rabbits. Fifty grammes of the sugar was dissolved in water to form 150 c. c. solution, and 10 to 15 c. c. were injected at intervals of about an hour for ten hours. The animal was afterward left quietly for five hours, and then killed. The average of glycogen obtained is given below; in each case two or more experiments were made:

	Grammes of glycogen in liver.	Per cent. of glycogen in liver.
50 grammes dextrose............	3·5	5·0
55 " cane sugar..........	0·4	0·7
50 " lævulose............	5·5	5·9
50 " milk sugar..........	0·3	0·8

This table, showing results after the subcutaneous injection of the various sugars, exhibits very striking differences. It is evident that dextrose produces much glycogen, and cane sugar little. Hence the large amount of glycogen found after cane sugar has been taken into the intestines is in virtue of its change there into invert sugar—*i. e.*, a mixture of dextrose and lævulose. Maltose probably acts like cane sugar. Milk sugar shows little increase in the glycogen stored, and therefore can not be converted into dextrose. On the contrary, large quantities of glycogen, even as high as 9·1 per cent., were found after subcutaneous injection of lævulose. There can be but one conclusion, therefore, and that is that the liver cells have the property of transforming lævulose either into dextrose, or directly into the anhydride of dextrose, glycogen. Emil Fischer showed a few years ago that dextrose could be made from lævulose in the laboratory. This is now seen to have its counterpart in the animal kingdom. Entirely analogous to this is the preparation of milk sugar from dextrose in the glands of the breast.

It is remarkable that only the two fermentable sugars, dextrose and lævulose, are convertible into glycogen. The liver cells manufacture glycogen from these two sugars only.

In plants there are similar transformations. Arthur Mayer, working in Göttingen, has shown that leaves make starch of dextrose, of lævulose, and galactose. Also vegetable starch is made from mannite, dulcite, and maltose.

The importance of glycogen for the animal organization is that of a transitory, reserve material.

There is usually taken, at an ordinary meal, an excess of albumin, fat, and carbohydrates, over and above the immediate needs of the body. This excess must not remain in the blood, as there it would disturb the processes in the cells, or it would be excreted in the urine. The cells are not able to decompose this excess in a short time, and even if this were possible, more energy would thus be liberated than necessary for the needs of the body in the time given. To obviate these disturbances, the excess is deposited in a less combustible form and in a less readily accessible place. The soluble circulating albumin of the blood is, to some extent, deposited as systemic albumin in the substance of the body; the fat is deposited in the fatty tissue, and the sugar is deposited in various organs of the body, especially in the liver cells, as the less diffusible, less decomposable glycogen.

We know that the facts go to prove that albumin is broken up in the body into a nitrogenous portion and a non-nitrogenous portion. The investigations of Feder show that in a dog the greater part of the nitrogenous portion of the albumin consumed is already excreted in the first fourteen hours, while the non-nitrogenous portion requires twenty-four hours for its combustion. This first decomposition of albumin into a nitrogenous and a non-nitrogenous portion is not accompanied by the liberation of much energy, as, in the few hours of this decomposition, more energy would be set free than needed. The principal source of energy comes, therefore, from the non-nitrogenous portion, just as it is also found in the non-nitrogenous sugar and fat. The temporary excess of the non-nitrogenous portion of the albumin, as well as the excess of food sugar and fat, are deposited in the body as fat and glycogen, and then, in the course of twenty-four hours, gradually re-enter the blood current and are burned in the cells. In this way the glycogen produced is always swept away again in amounts dependent upon the needs of the cells.

The first demonstration of glycogen by Claude Bernard was little more than play with an interesting toy. Experiments since have shown that the transformation of the easily combustible sugars into the less combustible glycogen is at once one of the most wonderful and one of the most important arrangements in the animal organization.

In closing this article, and in furnishing the American profession with the principal results of these latest views and investigations of Professor Voit, the writer takes the opportunity to express his deep gratitude to his great teacher, and his high personal admiration for him developed during long contact in the laboratory.

PNEUMONIC GANGRENE.[*]

By EDWARD F. WELLS, M. D.,

CHICAGO.

The issue of pneumonic fever in gangrene of the pulmonary tissues is an event of rare occurrence, although not so infrequent as some writers would have us believe; neither is it so frequent as was supposed by the ancients.

Laennec,[†] to whom we owe the first clear and precise treatise on pulmonary gangrene, met with only a few cases in all his immense experience. Andral,[‡] with unsurpassed facilities for observation, had no well-defined views of his own, and contented himself by saying that the very existence of this termination had been denied by some, and that, in his opinion, the entire subject required further study. Stokes[#] never met with a case in childhood, but saw several in adults. Copland[‖] observed the condition but rarely. Cullen[△] states that the termination of pneumonic fever in gangrene is much more rare than has been imagined. Trousseau,[◊] in the course of an experience which for extent, breadth, and duration is accorded to but few, never saw a case. Elliottson[↧] also never met with an example. Walshe[↕] says that it is "one of the very rarest terminations" of this disease, and similar words are used by Frank,[‡] Lépine,[1] Tanner,[2] and many others. Of Grisolle's[3] three hundred and five cases not one terminated in gangrene. Sturges[4] goes so far as to deny that gangrene is ever a consequence of the pneumonic process. Ziemssen[5] met with it only rarely, and Baginsky[6] not at all, in infantile cases, while West[7] does not consider it very uncommon. Filehne,[8] Green,[9] Herz,[10] Gibbon,[11] Molloy,[12] Juergensen,[*] Rokitansky,[†] Watson,[‡] Willard,[#] and others met with it very rarely. Dietl[‖] met with it twice in 750 cases. Huss[△] encountered it twelve times in 2,710 cases of pneumonic fever, Jones[◊] once in 215 cases, Ziemssen[↧] once in 201 cases, Fismer[↕] eight times in 882 cases, Fox[‡] in 2 of 53 cases, Stortz[1] in 4 of 286 cases, Schapira[2] once in 173 cases, Townsend and Coolidge[3] three times in 1,000 cases, and myself eight times in 498 cases. Williams[4] met with 11 cases in six years' practice. Canstatt[5] met with 20 cases. Probart[6] encountered 9 cases, Reynaud[7] 2 cases, Dodonœus[8] 3 cases, Biermer[9] 6 cases, Briquet[10] 2 cases, Hensel[11] 14 cases, Pserhofer[12] 5 cases, Züchner[13] 3 cases, and Doubleday[14] 1 case in 252 pneumonic patients. Loomis[15] meets with gangrene in two per cent. of his cases, and Lépine[16] has had a similar experience. Willigk[17] found it present in 583 post-mortem cases, Lauthna[18] in 5 of 1,069 fatal cases, and Delafield[19] in 2 of 123 fatal cases. St. George's Hospital, London, afforded 19 cases in ten years.[20] Fischel[21] found gangrene of the lungs seventy-five times in 3,437 deaths from all causes.

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[*] Read before the Chicago Pathological Society, April 11, 1892.

[†] *Mediate Auscultation*, New York, 1830, p. 226.

[‡] *Med. Clinic*, Philadelphia, 1843, vol. ii, p. 116.

[#] *Dublin Jour. of the Med. Sci.*, 1850.

[‖] *Med. Dic.*, New York, 1856, vol. ii, p. 883.

[△] *Prac. Physic*, Philadelphia, 1792, vol. i, p. 188.

[◊] *Clin. Med.*, Philadelphia, vol. ii, p. 552.

[↧] *Prac. of Med.*, Philadelphia, 1844, p. 759.

[↕] *Diseases of the Lungs*, Philadelphia, 1860, p. 287.

[‡] *De cur. hom. morb.*

[1] *Pneumonie*, Vienna, 1883, S. 117.

[2] *Clin. Med.*, London, 1871, p. 246.

[3] *Traité de la Pneumonie*, Paris, 1841, p. 246.

[4] *Pneumonia*, London, 1876, p. 117.

[5] *Pleuritis u. Pneumonie*, 1862, S. 163.

[6] *Pneumonie u. Pleuritis*, Tübingen, 1880, S. 63.

[7] *Diseases of Infancy*, p. 318.

[8] *Lungenbrand*, Erlangen, 1877.

[9] Quain's *Dic. of Med.*, New York, 1884, p. 878.

[10] Von Ziemssen's *Handb.*, Bd. v, S. 519.

[11] London *Lancet*, New York, 1856, vol. ii, p. 432.

[12] *Ibid.*, 1854, vol. ii, p. 30.

Were every case of pneumonic fever accompanied by fœtid breath considered as one of pulmonary gangrene we would meet with this complication on every side and in abundance. If, however, it be required that the diagnosis be established by a sufficientarray of corroborating, if not unequivocal, signs and symptoms in the cases ending in recovery, and by the indubitable evidence of post-mortem section in those terminating fatally, they will be encountered much less frequently.

But even the evidence of the dead-house, as reported in times past, must be accepted with caution. Thus the ancients[*] speak freely and often of a gangrenous condition of the lungs, but it is more than doubtful whether they refer to an actual death of the tissues—to which state we now limit this term—or merely to a dark or black color of the parts. That this inferential unreliability of their accounts is well founded is evidenced by the consideration that, although a gangrenous condition is so frequently referred to, yet the leading and obvious symptom—that of fœtor—which could scarcely escape notice, is not often mentioned in this connection. Even Graves,[†] only half a century ago, spoke of lung tissue breaking down easily between the fingers, "resembling gangrenous lung, except that there was an absence of fœtor."[‡]

Gangrene of the lungs may arise from one or more of severalc onditions. Thus a cavity—tubercular, from abscess, or from dilated bronchi—within the hepatized area, may be the starting-point of the necrosis. The stagnant contents of the cavity putrefy and infect the cicatricial walls, which, from the nature of their blood-supply, are illy able to withstand an energetic inflammatory onslaught.

Cases of this kind are by no means rare. Laurent[#] reports the case of a consumptive lady, who had had several attacks of hæmoptysis, who was taken with an acute pain in the right side, followed by the ordinary symptoms of pneumonic fever. On the fourth day the cough was violently convulsive, and she expectorated a large quantity of greenish pus mixed with a black substance having a horribly fœtid odor. Expectoration continued for ten months, when recovery finally ensued. Two of my own cases were of this nature:

A farmer, aged sixty, temperate, but with a broken-down constitution, and long a subject of chronic bronchitis and well marked bronchiectasis, was taken, October 20, 1878, with the ordinary symptoms of pneumonic fever, locally affecting the upper lobe of the left lung. On the eighth day, and suddenly, the breath and expectoration became horribly fœtid. The cough was infrequent, not very severe, and the comparatively scanty expectoration was raised without much effort. The expectoration was of a dirty, reddish-brown color, thin and not viscid. After standing for twenty-four hours it exhaled a valerianic odor which was not particularly unpleasant. If, however, the fluid was agitated, the fœtor was again manifested. At the bottom of the conical glass there was a considerable sediment, consisting of pus-cells, altered blood-corpuscles, etc. Elastic tissue was not recognized. The patient at once passed into a state of extreme prostration, with coldness of the surface, subnormal temperature, sighing respiration, apathy, etc., and so remained for several days. On the sixteenth day of his illness he was able to sit up, and, with slight support, to walk about the room. The quantity and quality of the expectoration varied from time to time, but it gradually became more purulent and less fœtid, so that at the end of six weeks it was no longer gangrenous. The patient remained weak and unable to work for several months, but he eventually entirely recovered.

An intemperate farmer, aged forty-two, had an attack of pneumonic fever in November, 1874. The exudation material was slowly removed, his cough continued, and in the June following he had hæmoptysis. The case developed into one of unequivocal phthisis, with the formation of cavities. In December, 1880, after exposure to cold and wet, he again suffered an attack of pneumonic fever, locally affecting the left lung. By the sixth day the fever had disappeared and convalescence seemed assured, but during the night symptoms of collapse set in and he died suddenly early in the morning. At the autopsy the upper lobes of both lungs were found riddled with tubercular cavities. The base of the left lung was found hepatized, mottled on section, and the bronchi filled with muco-purulent matter. In the upper portion of the lower lobe, near the root of the lung, posteriorly, was an abscess cavity, the size of a pigeon's egg, with thick walls, and a free opening into a large bronchial tube. It was full of pus and a portion of its wall the size of a finger-nail was dark, shaggy, and gangrenous. This portion readily broke down under pressure and exhaled a very fœtid odor, which clung tenaciously to the fingers.

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[*] Von Ziemssen's *Handb.*, Leipsic, 1877, Bd. v, S. 148.

[†] *Path. Anat.*, Philadelphia, vol. i, p. 80.

[‡] *Prac. of Physic*, 1845, p. 574.

[#] *Phila. Med. Times*, 1879, vol. xii, p. 384.

[‖] *D. Aderlass*, Vienna, 1852, S. 36.

[△] *Lungenentzündung*, Leipsic, 1861, S. 37.

[◊] *Jour. of the Am. Med. Assoc.*, August 7, 1886, p. 144.

[↧] *Pleuritis u. Pneumonie*, Berlin, 1862.

[↕] *Arch. f. k. Med.*, 1873, S. 391.

[‡] Reynolds's *Syst. of Med.*, Philadelphia, 1880, vol. ii, p. 184.

[1] *Inaug. Diss.*, Würzb., 1884, S. 75.

[2] *Inaug. Diss.*, 1877, S. 42.

[3] *Trans. of the Am. Climat. Assoc.*, 1889.

[4] London *Lancet*, New York, 1862, vol. ii, p. 5.

[5] Quoted by Lorenzen, *Inaug. Diss.*, Kiel, 1854, S. 7.

[6] *Trans. of the Provin. Med. Assoc.*, vol. xvii, p. 351.

[7] *Jour. de méd.*, Mai, 1880.

[8] *Med. Observ.*, 1881, cap. 23.

[9] *Lehre vom Auswurf.*, Würzb., 1855, S. 123.

[10] *Arch. gén. de méd.*, 1841.

[11] *Inaug. Diss.*, Berlin, 1887, S. 13.

[12] *Unger. méd. Zeitung*, 1856, No. 12.

[13] *Inaug. Diss.*, Berlin, 1874.

[14] *Med. Rec.*, March 28, 1885.

[15] Pepper's *Syst. Med.*, Philadelphia, 1885, vol. iii.

[16] *Pneumonie*, Vienna, 1883, S. 124.

[17] *Prager Vierteljahrschr.*, Bd. xxxviii, S. 13.

[18] Quoted by Flint. *Prac. of Med.*, 1868, p. 244.

[19] *N. Y. Med. Jour.*, July, 1875, p. 68.

[20] Fuller. *Diseases of the Lungs*, London.

[21] *Prager Vierteljahrschr.*, 1847, No. 1.

[*] See Aretæus, *Acut. affec.*; Celsus, *De medicina*; Cœlius Aurelianus, *Acut. morb.*; *et al.*

[†] *Clinical Lectures*, Dublin, 1837, vol. i.

[‡] See Sturges. *Pneumonia*, London, 1876, p. 10.

[#] *Am. Jour. of the Med. Sci.*, vol. iii, p. 201.

Gangrene may result from excessive exudation into the alveoli and pulmonary parenchyma. In these cases the circulation is so much impeded that death of the parts ensues. This is probably the most frequent cause. It has been supposed that a highly hæmorrhagic exudate is especially prone to be followed by gangrene, but this is scarcely possible. Delayed absorption of the pneumonic deposit and gangrene very frequently appear together, because they are both due to the same cause—insufficient blood-supply.

Holt * records a case in which the gangrene seems to have been due to obstruction of the nutrient arteries. A boy, three years of age, was suddenly attacked with pneumonic fever, which pursued a typhoid course—with sordes, bleeding from the mouth, diarrhœa, drowsiness, etc.—and ended fatally in two weeks. At the autopsy there was found at the right base, posteriorly, a succulated pleurisy containing six ounces of dirty-brown serum. In front of this the diaphragmatic and visceral pleuræ were covered with a very thick false membrane. In the base of the lung there were several masses of odorless gangrenous tissue, following the lines of the bronchi † and varying in size from that of a pea to that of a large walnut.

The following case from my records is an example of gangrene and delayed absorption of the pneumonic deposit: A farmer, aged forty, of previous good health, was taken, October 10, 1877, with pneumonic fever, locally affecting the upper two thirds of the right lung. Gangrene, as manifested by gangrenous fœtor of the breath and sputa and the appearance of elastic pulmonary tissue in the expectoration, began on the fourth day. Depression of the vital powers was extreme and continued for several days. He was confined to his bed for a month, but the gangrenous expectoration continued, in quantity gradually diminishing, for two months. The pneumonic exudate was absorbed very slowly—more than eight months elapsing before the lung cleared up. The patient recovered, but was never the man, physically or mentally, that he was formerly, and died, four years later, from a third attack of pneumonic fever.

An embolus or a thrombus may entirely cut off the blood-supply from a greater or lesser wedge-shaped portion of the lung, with sphacelus as an inevitable result.

A woman suffering from phlegmasia alba dolens experienced a sudden pain in the right side, followed by the symptoms of pneumonic inflammation. On the fourth day the breath and sputæ were fœtid and she died on the sixth. The autopsy disclosed an extensive gangrenous loss of substance in the upper lobe of the right lung and occlusion of a large branch of the right pulmonary artery supplying the part.*

Wagner's † remarkable case was of this nature. In this instance a piece of lung tissue three inches long and one inch broad was found lying loose ‡ in the pleural cavity, and from thence removed by an operation. The patient recovered. This case also illustrates the only way in which recovery can ensue—viz., by the removal of the necrosed part.

One of my cases presenting some unusual features may be reported in this connection. The most marked peculiarity is that at no time was there any fœtor of the breath or expectoration. In this case the question is presented whether the empyema was due to the gangrene or *vice versa*. The case is one of the most interesting in my series: A well-nourished boy, aged seven, was struck on the chest at an uncertain place, and was taken, the same evening, March 18, 1881, with a chill, followed by fever, dyspnœa, acute pain in the left side, and a frequent, short, and painful cough. I first saw him on the third day and found, in addition to the symptoms above mentioned, a flushed countenance, pulse of 132, respirations 32, short and restrained, and a temperature of 102·6°. There was dullness over the left side of the chest as high as the second rib, with bronchophony and pure tubular breathing behind; absence of all respiratory sounds in front and at the side below the nipple line, and fine crepitation high up in the axilla at all times and in front above the nipple on forced inspiration. The apex-beat of the heart was beneath the sternum. The left side of the chest remained almost and at times quite motionless during respiration. The intercostal spaces were prominent. After the fifth day the fever and other acute symptoms declined, but the patient remained short of breath and weak and had a very severe and convulsive, although not very frequent, cough. On April 26th the pulse was 108, temperature 98·5°, and respirations 32. The apex beat was far to the right of the sternum. The intercostal spaces were bulging; there was dullness and absence of all respiratory sounds and vocal fremitus, and distended veins covered the left half of the thorax. A trocar and cannula were introduced in the eighth intercostal space below the angle of the scapula and twenty ounces of creamy, fœtid pus removed. Respiratory sounds were now heard all over the back and front and as low as the nipple line in the axilla. On May 7th the line of dullness had ascended and there was a bulging at the site of the recent puncture. An incision one inch long was made in the eighth interspace which gave exit to a large quantity of dark and offensive pus and a shred of pleuritic membrane one inch long and three eighths of an inch wide at the broadest part, having attached to its larger end a piece of necrotic lung tissue of the size of a split pea. A gradually diminishing offensive discharge continued for two weeks, when the opening closed, with perfect restoration of health and respiratory function. The very severe cough ceased immediately with the removal of the necrotic mass. At no time during his illness was there fœtid expectoration or breath, neither was there pneumothorax.

Hertz # also reports a case following injury to the chest. A sailor, seventeen years of age, was struck on the left side of the chest with a piece of coal. This was followed by pain, fœtid and sanguinolent expectoration, and death. At the autopsy the ribs were found uninjured. The left pleural cavity contained an abundant effusion and the lung a gangrenous cavity.

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* *Med. Rec.*, January 3, 1885, p. 21.

† The bronchial arteries which nourish the lung are remarkable for their great length as compared with their caliber, and are thus extremely liable to become obstructed.

* Dumontpallier. London *Lancet*, New York, 1857, vol. i, p. 135.

† *Berliner k. Wochenschr.*, September 6, 1880, S. 511.

‡ See also Ebhardt. *Inaug. Diss.*, Kiel, 1885, S. 11.

# Von Ziemssen's *Handb.*, 1877, Bd. v, S. 520.

There may be a single spot of gangrene or there may be numerous foci. The blood is surcharged with fibrin or fibrin-producing elements, and its flow through the bronchial and pulmonary nutrient vessels is impeded by compression and perhaps by inflammation and roughening of the inner walls of the blood-vessels. Coagulation results and the parts beyond, being cut off from the general circulation at a very critical period, die. These patches of gangrene often follow the ramifications of the bronchi.

Various conditions seem to invite necrotic action in the inflamed lung, and these may be regarded as predisposing causes.

Thus gangrene is peculiarly liable to complicate pneumonic fever in the subjects of diabetes, insanity, alcoholism, diseases of the mouth and throat, anthrax, malarial disease, the acute exanthemata, scurvy, hæmoptysis, glanders, intrathoracic tumors, typhoid fever, nephritis, and other diseases. It is also sometimes distinctly epidemic.

Thus in the plague of Athens the breath became unnatural and fœtid,[*] and the same is said of the victims of the black death.[†] Gangrene of the lungs was found in many of the fatal cases in the Philipsburg and Breisgau epidemic of 1669.[‡] In the Plymouth epidemic the expectoration was often gangrenous and so acrid as to cause soreness of the pharynx, and the breath was hot and offensive.[#] Gangrene was a marked feature of the Chester [‖] and Rouen [△] epidemics in the last century, and in the Paris, Dera Gazi Kahn, and other epidemics of the present century.[◊]

Lépine [↕] asserts that this complication is more frequent in some climates than in others, and that gangrene is a frequent issue of the pneumonic fevers of India, Malabar, and the coast of Coromandel, but I am inclined to consider his information upon which this conclusion is predicated as unreliable.

Pneumonic gangrene is no respecter of sex, and is observed in the two sexes in about the same proportion as pneumonic fever—viz., seventy-three per cent. of males to twenty-seven per cent. of females.

Thus the cases of Huss—twelve—were all in males. Of the nine cases observed by Kaulich, seven were in males. Of Lebert's thirty-two cases, twenty-two were males; and of my eight cases, seven were in males.

It has been thought that gangrene is more frequently the issue of pneumonic fever in the aged than at other periods of life, but the information at my disposal leads me to conclude that age, beyond that of childhood, is not an influential factor.

Thus of sixty cases analyzed by Lebert,[*] ten were under twenty years of age, thirty-seven were from twenty to sixty, and thirteen were over sixty. Of sixty-three cases analyzed by Laurence,[†] six patients were under twenty, forty-three were from twenty to sixty, and fourteen were over sixty. Of nine cases observed by Boudet,[‡] five were in children, two in adults, and two in aged persons. Huss's[#] twelve cases were all in adults. Of my eight patients, one was a child, six were adults, and one an aged person.

That gangrene is rare in infantile pneumonic fever is evidenced by the fact that Atkins [‖] could find recorded in the entire field of medical literature only thirty-five cases, although several have been added since 1872. West [△] considers it more frequent in children than in adults, but in this he is evidently in error.

The following case from Smith [◊] illustrates this termination of the pneumonic process in the infant:

> A child of eight months became suddenly feverish and restless, and vomited several times, the vomiting continuing thirty-six hours. The temperature rose to from 103° to 105·5°, the pulse to 180, and the respirations to 80. There were muscular twitchings and much rolling of the head. There was an insignificant cough. Dullness began at the apex of the right lung, but at the end of a week there was dullness over the entire left lung, with faint broncho-vesicular respiration, which seemed distant and indistinct. The apex-beat of the heart could not be detected. The child died, and at the autopsy there was found in the apex of the right lung a small nodule of consolidation, with seven or eight little spots of necrotic tissue. The left lower lobe was hepatized and the superficial portions gangrenous. Plastic exudation covered the pleura of the right upper lobe and entire left lung.

Laennec recognized two distinct varieties of the gangrenous process—the diffused and the circumscribed. In the first the gangrenous tissues blend insensibly with the surrounding hepatized parts, and are usually of considerable or even great extent.[↕] In the second variety the necrosed portion is separated from the remainder of the lung by a distinct line of demarkation, and is usually of small extent, although it may be large. The two forms may be found together, and the first variety would probably pass into the second could the patient's life be sufficiently prolonged to allow the completion of the process.

The color of the necrotic mass varies through every shade from a dirty, ashen-gray to dark-brown, dark-green, or black. In consistence it varies from that of softened gristle to a softened, broken-down, and fluid detritus. The fœtor is peculiar, horrible, and almost insupportable. Fœtor, however, is sometimes absent.

No sooner has gangrene occurred than there begins an effort of Nature to get rid of the necrosed tissues, and this is effected by a process of softening and disintegration, followed by extrusion of the detritus. A cavity of greater or lesser extent is the inevitable result. Certain of the pulmonary structures resist these destructive processes for a longer time than do others, and in the mass of *débris* as it fills the cavity may be seen the walls of blood-vessels and portions of elastic tissue long after all the remaining tissues have become disorganized and unrecognizable. Rarely some of these shreds or pieces may be of large size and, acting as foreign bodies, delay or prevent a cure. The gangrenous depot may be evacuated into any of the neighboring cavities or passages-ways, or externally.

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[*] Thucydides. *Opera*, Lib. iv, cap. 64 *et al.*

[†] Ozanam. *Mal. épidém.*, Paris, 1817, T. iv, p. 76 *et al.*

[‡] Brunner. *Epidem. Pleuro-pneum.*, Heidelb., 1689; Chomel, *op. cit.*, S. 245; Sturges, *op. cit.*, p. 6; Vorster, *Pleuro-pneum. epidem.*, Basil, 1689.

[#] Huxham. *Epidem. Dis.*, London, 1748, vol. ii, p. 59.

[‖] Haller. *Op. Path. Obsv.*; Sturges, *op. cit.*, p. 9.

[△] Lepecq de la Cloture. *Epidem. Krankh.*, Altenb., 1788, S. 417.

[◊] Wells. *Op. cit.*, p. 258.

[↕] *Pneumonie*, Vienna, 1883, S. 124.

[*] *Klinik d. Brustkrankh.*, Tüb., 1874, Bd. 1, S. 827.

[†] *Thèse de Paris*, 1840, p. 14, et *Jour. l'expérience*, t. v, p. 321.

[‡] *Arch. gén. de méd.*, Sept., 1843.

[#] *Lungenentzündung*, Leipsic, 1861.

[‖] *Inaug. Diss.*, Zürich, 1872.

[△] *Diseases of Infancy*, p. 318.

[◊] *Med. Rec.*, July 16, 1887, p. 84.

[↕] Züchner (*Inaug. Diss.*, Berlin, 1874, S. 25) reports a case in which the cavity was as large as a child's head.

A boy, aged four years, received a blow upon the chest, followed by pain, restlessness, cough, and expectoration. There was dullness over the entire right side of the chest, posteriorly, with bronchial breathing. At the end of three weeks there was tympanites, bruit de pot félé, metallic tinkling, amphoric respiration, and coarse râles. At the autopsy there was found diffuse gangrene of the upper lobe of the right lung, with cavities communicating with the œsophagus, and a cavity as large as a walnut in the center of the lower lobe. There was swelling and gangrene of the bronchial glands, one of which had evacuated its contents into the right bronchus.[*]

Sometimes a detached piece of lung tissue can not escape through the opening into the bronchus, and remains incarcerated in the gangrenous cavity, retarding or preventing recovery.[†]

Often a circumscribed gangrene is confined to the walls of a bronchial tube or a pre-existing cavity. In these cases the dead and the living tissues are separated by a distinct line of demarkation, which is formed early, and there is no tendency to extension. From the living surface a fibrinous fluid exudes which coagulates upon coming in contact with the dead matter, and thus forms an efficient barrier against infection.[‡] This, becoming organized, forms the basis of the cicatricial tissue of repair. The necrosed spot, which presents very much the appearance of a caustic eschar, disintegrates and is expectorated. These, like all cavities in the lung, are slow in healing, and may even remain permanently.

Gangrenous cavities situated under the pleura may perforate this membrane and discharge into the pleural cavity, causing pneumothorax and pyopneumothorax.[#] This is certainly a very dangerous, although not necessarily fatal, accident. In cases of this kind that have not proceeded to perforation the pleura may be found detached from the lung, being stripped up by the gas which is formed as a result of the necrotic action.

A man, aged twenty-eight, was thrown from the top of a stair while intoxicated, and, although there was no external wound, there gradually developed increasing pain in the right side of the chest, with fever, cough, and expectoration. Over the lower lobe of the right lung there was dullness, bronchial breathing, ægophony, and higher, crepitation. On the seventh day there was fœtid expectoration. At the autopsy the right lung was found inflamed, with peripheric gangrene and detachment of the pleura.[*]

The gangrenous process may be localized in the pleura, as evidenced by the cases of Duplay,[†] Holt,[‡] Trousseau,[#] and others.

Pneumonic gangrene has its favorite seat in those portions of the lungs which are most frequently hepatized. The lower lobes, and especially their upper parts, are common locations. The circumscribed form which is found upon the walls of the bronchi or purulent cavities occurs oftenest in the upper lobes.

Gangrene of the lung occurring as an issue of pneumonic fever is of the most serious consequence, and generally gives rise to very characteristic symptoms. It may appear in either a mild or a severe case and at any stage of the disease. It may even occur in the stage of engorgement;[‖] but this must be very rare, it generally appearing toward the end of the first or during the second week.

With the commencement of the gangrenous process the strength of the patient suddenly and very markedly fails; the pulse becomes weak, small, frequent, and often irregular; the skin assumes a peculiar ashen pallor; the extremities become cold, and the temperature often falls to below the normal. If the air within the lungs comes in contact with the necrotic tissues, the breath and expectoration become fœtid.[△] Sometimes the expired air is only fœtid after coughing or forcible inspiration. Gangrene is not infrequently found at the autopsy in cases which during life presented neither fœtid breath nor fœtid expectoration. Atkins [◊] found fœtor of the breath absent in thirty-nine per cent. of the cases analyzed. In some cases fœtor of the breath is present only at occasional intervals and for periods of variable duration.

Molloy [‡] records a case in which every effort at coughing and expectoration was preceded by great fœtor of the breath. The gangrenous cavity seemed to fill with a thin, watery, greenish fluid, which periodically overflowed into the bronchial tubes and was discharged.

Fœtor of the breath alone is no certain indication of gangrene, although it is generally a cardinal symptom. It may, however, arise from a variety of independent causes—*e. g.*, fœtid bronchitis, tuberculosis, abscess, empyema, etc.

A boy, aged nine, was taken with pneumonic fever, locally affecting the bases of both lungs. There was headache, purple spots upon the cheeks, an anxious countenance, dullness of intellect, subsultus tendinum, impairment of vision, thick and livid lips, gangrenous gums, etc. His breathing was rapid and labored, and the cough was infrequent. Pain ceased after the eighth day, and after the ninth day the breath was fœtid.

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[*] Atkins. *Inaug. Diss.*, Zürich, 1872.

[†] See case reported by Louis, *On Phthisis*, Boston, 1836, p. 27.

[‡] This was evidently the "ulcerous phthisis" of Bayle. *Rech. sur la phthisie*, Paris, 1810, p. 30.

[#] Atkins (*op. cit.*) found pneumothorax in seventeen per cent. of cases, but I am inclined to consider this estimate as being entirely too high. See also West, London *Lancet*, 1884, vol. i, p. 791.

[*] Hertz. *Op. cit.*, S. 520.

[†] *Arch. gén. de méd.*, t. i, p. 161.

[‡] *Med. Rec.*, January 3, 1885, p. 21.

[#] *Clin. Med.*, Philadelphia, 1873, vol. i, p. 553.

[‖] See Copland. *Med. Dic.*, New York, 1855, vol. ii, p. 882.

[△] The fœtor of the breath sometimes precedes the fœtor of the expectoration by three or four days. See Züchner, *op. cit.*, S. 11.

[◊] *Inaug. Diss.*, Zürich, 1872, *et al.*

[‡] London *Lancet*, New York, 1854, vol. ii, p. 30.

Death occurred on the thirteenth day. At the autopsy the bronchi were rosy; the bronchial glands firm, and the size of peas; the stomach ulcerated, and gray hepatization of both bases.[*]

In some persons the ordinary odor from the secretions of the respiratory surfaces is one of fœtor. A gangrenous ulcer of or the lodgment of viscid secretions upon the surfaces of the upper air passages will also produce fœtid breath.[†]

Even the skin may exhale a fœtid odor:

A man, aged twenty-eight, of full habit, was taken with a rigor, pain in the left side, and cough. On the next day he had an ardent fever, a flushed face, and dark, sanguinolent expectoration. He was unable to lie upon the right side, had a fœtid breath, and a cadaveric odor from the whole body. After offensive expectoration and several attacks of hæmoptysis, death occurred on the eleventh day. At the autopsy a gangrenous abscess the size of a large apple was found at the base of the left lung. It had no communication with the bronchi and was surrounded by hepatized tissue. The bronchi in the apex of the right lung were dilated and filled with putrid matter which exhaled an exceedingly fœtid odor.[‡]

This was true of one of my cases.

A man, aged fifty-six, was taken, November 30, 1879, with a profound chill, followed by fever, cough, pain in the region of the right nipple, expectoration of small quantities of rusty mucus, etc. Dullness and bronchial breathing over the lower two thirds of the right lung was soon noticed. From the first the disease assumed a low form, but on the sixth day the patient became collapsed, and remained in a drowsy and apathetic state until the tenth day, when he died. Soon after these low symptoms set in, his body exhaled a peculiar nauseous, although not exactly disagreeable, odor, faintly resembling that of newly mown hay. On the ninth day, during a fit of coughing, which had become severe and convulsive, he had a rather smart attack of hæmoptysis. After this, following each coughing fit, his breath was horribly fœtid. The expectoration was dark and had a gangrenous odor. After the breath and sputa became fœtid, the exhalations from the surface were no longer perceptible; whether it ceased or was simply masked by the heavy gangrenous fœtor which hung like a pall over the victim, is uncertain.

The circulation in the blood of morbid matter from incarcerated gangrenous foci may also cause eruptions of the skin.

Fox[#] reports a case, complicated by parotiditis, pericarditis, constant vomiting, albuminuria, dysenteric diarrhœa, and a petechial eruption which passed into large vesicles filled with a dirty-looking, blood-stained serum. The autopsy revealed disseminated gangrene of both lungs.

The expectoration in cases of pneumonic gangrene is usually markedly characteristic. It loses its viscidity and becomes thinner and darker. At first it may be hæmorrhagic, but later it is simply a dark, watery sanies. It may contain pus and shreds of elastic lung tissue, although the latter is usually scanty. The color ranges through the shades of dirty green, brown, dark gray, etc. It is usually fœtid, and often horribly so. The fœtor is in character *sui generis*, very penetrating, extends itself to a great distance, and clings to any object with which it comes in contact with wonderful pertinacity. Fœtid breath and sputa, in connection with the other symptoms above mentioned, coming on in a case of pneumonic fever are very characteristic[*] of gangrene. A peculiarity of gangrenous sputum is that after standing for several hours there is developed a rather pleasant odor, resembling that of cowslips,[†] primrose,[‡] honey,[#] etc.

Recent gangrenous sputum is alkaline,[‖] but after standing a while it becomes acid.[△] It separates into three layers—an upper frothy, yellowish-green, albuminous layer; a middle dirty, grayish-green, flaky, opaque, or translucent layer; and a lower one of a light-brownish or greenish color, but often of variable hue, consisting in the main of a sediment of pus-corpuscles, elastic fibers, and detritus. Under the microscope may be seen alveolar fragments, elastic and connective tissue, leptothrix fibers, blood-corpuscles, crystals of the fatty acids, molecular detritus, etc.

If the sputa are swallowed, anorexia and diarrhœa are apt to follow.

Hæmoptysis is a very common symptom. It may appear early or come on late. If it occurs early it is usually moderate in amount and devoid of danger, but if it is delayed until a late period it may be excessive, dangerous, or even fatal.

Some cases are remarkable for a succession of attacks with intervals of apparent recovery. During the exacerbations the fever runs high, with chilliness and profound constitutional disturbance. A quantity of fœtid gangrenous matter is expectorated and the breath is offensive. After a variable period these distressing symptoms abate and a period of comparative health and comfort follows, until after a more or less prolonged season of repose another exacerbation ensues, these cycles being repeated time after time until perfect recovery is attained, or the patient, worn out by the repeated attacks, dies exhausted.[◊] One of my cases was of this nature.

A gentleman, aged sixty-six, was taken, in December, 1881, with the ordinary symptoms of pneumonic fever locally affecting the lower lobe of the right lung. The malady pursued a mild course until the eighth day, when he became suddenly profoundly prostrated and lay in a low stupor for two days. The expectoration became gangrenous and his breath horribly fœtid. After the fifteenth day gradual improvement in his symptoms supervened, and by the end of the second month he considered himself well. A peculiar cough,[*] violently convulsive and resembling that of pertussis, with the physical signs of pulmonary consolidation, persisted. Soon his appetite began to fail and he became moody and feverish, and complained of chilliness and widely distributed, aching pains. His breath again became fœtid and the expectoration exhaled a gangrenous odor. After a week these symptoms subsided. Such exacerbations recurred at intervals for seven months. Hæmoptysis—once free, but usually slight—occurred at frequent intervals, in connection with and independently of the exacerbations. Complete recovery ensued.

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[*] Gerhard. *Am. Jour. of the Med. Sci.*, vol. xiv, p. 328.

[†] Hoppe. *Med. chir. Rund-schau*, Vienna, 1882, S. 43; Wells, *St. Louis Med. and Surg. Jour.*, January, 1878.

[‡] Graves and Stokes. *Dublin Hosp. Rep.*, vol. iv.

[#] *Op. cit.*, p. 204.

[*] Cruveilhier (*Am. Jour. of the Med. Sci.*, vol. ix, p. 204) says pathognomonic, but this is not true.

[†] Williams. London *Lancet*, New York, 1862, vol. ii, p. 5; *Med. Times and Gaz.*, March 2, 1872.

[‡] Atkins. *Inaug. Diss.*, Zürich, 1872; Da Costa, *Med. News*, 1887.

[#] Trousseau. *Clin. Med.*, Philadelphia, 1873, vol. i, p. 552.

[‖] Depending upon free ammonia and alkaline bases.

[△] From the development of butyric and margarinic acids. Sometimes the acidity is very intense. With the destruction of the fats and pus globules there are formed also tyrosine, glycerin, ammonia, sulphureted hydrogen, and possibly valerianic and cupronic acids. See Leyden u. Jaffe. *Arch. f. k. Med.*, Bd. ii, S. 488, and *Berliner k. Wochenschr.*, 1867, No. 1, und 1870, No. 36.

[◊] See Lesague. *Arch. gén. de méd.*, 1857, t. 11.

The diagnosis, if based upon an attentive consideration of the attendant phenomena, as above detailed, presents but few difficulties.[†] There is, however, a class of cases partaking of the nature of both gangrene and abscess, in which it is often difficult or impossible to determine whether or no the gangrene is the primary difficulty.[‡] These are generally considered as abscesses under the caption "gangrenous abscess." Even autopsy may not always relieve the doubt.

Thus a male was taken with pneumonic fever, locally involving the apex of the right lung. Abscess resulted, with a low range of temperature and fœtid expectoration. Death ensued, and at the autopsy there was found beginning gangrene of the walls of the abscess.[#]

Some cases give rise to no distinctive symptoms:

Thus, a man, aged thirty-six, complained of pain in the left side, with dullness, bronchophony, and a friction sound over the base of the left lung. He had rigors, became gradually weaker, and died in a month. At the autopsy the base of the left lung was found to be gangrenous and firmly united to the thickened diaphragm. There was also an abscess of the capsule of the left kidney, which had burrowed upward but not through the diaphragm.[‖]

Pneumonic gangrene is a condition of much gravity and danger, but it is not necessarily fatal. Indeed, a very considerable number of these cases will recover after a tedious convalescence, and I am quite sure that, by many writers, the danger has been greatly overestimated. The wide difference of opinion among authors on this subject is shown in the following statement:

Thus both of Dietl's[△] patients died. Of seven cases reported by Folkmann,[◊] five died. Walshe[‡] states that only a small minority—less than one twelfth—recover. The four cases of Stortz[‡] were all fatal. Schneider[‡] says that it is usually fatal. Pause[*] also says that it is generally fatal. Of Leyden's[†] eight patients, one died. Gerhard[‡] says that one half will die. Williams[#] lost three of eleven patients. Hertz[‖] states that death is the usual termination. Atkins[△] estimates the death-rate as eighty per cent. Fox[◊] considers it almost invariably fatal, as do also Chomel[‡] and Heiss.[‡] Huss[‡] was of the opinion that those with circumscribed gangrene might recover, while those with the diffuse variety could not. He lost ten of twelve patients. Reynaud[1] reports two cases cured. Townsend and Coolidge's three cases were all fatal.[2] Koch[3] says that the patient may recover, and Raven[4] does not consider the condition necessarily fatal. Of my eight patients, five recovered.

The liability to a fatal issue is greatly increased by a great extent, or the spreading form, of the gangrene, and by the great age[5] or debilitated condition of the patient. Such circumstances as excessive hæmoptysis,[6] pneumothorax,[7] or the unfavorable evacuation of the gangrenous *débris.*[8] Death may be due also to collapse or suffocation.[9] It is not infrequently sudden and unexpected. One of my patients died suddenly.

A gentleman, aged fifty-seven, was taken with a chill, followed by the ordinary symptoms of pneumonic fever, locally affecting the base of the right lung. On the sixth day his breath became fœtid, and on the next day he expectorated a considerable quantity of dark, bloody, and very fœtid matter. During the night he was raised in bed to drink, and expired instantly. An autopsy was not permitted.

Recovery may rarely ensue by the gangrenous mass becoming encapsulated.[10] It, however, usually ensues only after evacuation of the *débris* through the bronchi or the thoracic parietes and the subsequent closure of the cavity by cicatrization. The cavity may also remain permanent, with either a non-secreting surface or one secreting simple pus. If the cavity has been large, depression and contraction of the chest wall may follow cicatrization.[11] Medical literature is replete with many instances of the complete and permanent cure of pneumonic gangrene. To these I can add one more in addition to those already given:

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[*] Very characteristic of a gangrenous or abscess cavity.

[†] Fox (*op. cit.*) says that the diagnosis is difficult.

[‡] These are only incidentally considered here.

[#] Boldt. *Med. Rec.*, November 5, 1887, p. 608. See, also, a similar case by Smith, *Lancet*, 1889, vol. ii, p. 113.

[‖] Gull. London *Lancet*, New York, 1863, vol. ii, p. 605.

[△] *Der Aderlasse*, Vienna, 1853, S. 41.

[◊] *Inaug. Diss.*, Erlangen, 1847, S. 29.

[‡] *Dis. of the Chest*, Philadelphia, 1856, p. 314 et p. 316.

[‡] *Inaug. Diss.*, Würzb., 1884, S. 75.

[‡] *Inaug. Diss.*, Erlangen, 1876, S. 4.

[*] *Lungenentzündung*, Leipsic, 1861, S. 41.

[†] Volkmann's *K. Vorträge*, 1871, No. 26, S. 210.

[‡] *Dis. of the Chest*, Philadelphia, 1860, p. 231.

[#] London *Lancet*, New York, 1862, vol ii, p. 5.

[‖] Von Ziemssen's *Handb.*, Bd. v, S. 532. See also Meigs. *Arch. Pædiat.*, 1887.

[△] *Inaug. Diss.*, Zürich, 1872.

[◊] Reynolds's *Syst. of Med.*, Philadelphia, 1880, vol. ii, p. 206.

[‡] *Pneumonie*, Leipsic, 1841, S. 155.

[‡] *Inaug. Diss.*, München, 1857.

[‡] *Lungenentzündung*, Leipsic, 1861, S. 29.

[1] *Jour. de méd. de Paris*, May, 1880.

[2] *Trans. of the Am. Climat. Assoc.*, 1889.

[3] *Jour. of the Am. Med. Assoc.*, September 5, 1885, p. 262.

[4] *Practitioner*, vol. xxxi, p. 40.

[5] Loomis. *Charcot's Dis. of Old Age*, New York, 1881, p. 203.

[6] Atkins. *Inaug. Diss.*, Zürich, 1872.

[7] Roe. London *Lancet*, New York, 1852, vol. i, p. 17; West, *op. cit.*

[8] The evacuation may be delayed for a long time. Boarman (*Jour. of the Am. Med. Assoc.*, August 25, 1888, p. 268) reports a case in which forty days elapsed.

[9] See Atkins. *Op. cit.*

[10] Atkins. *Op. cit.*; Janeway, *Med. Rec.*, May 28, 1887, p. 613.

[11] See Wells. *Jour. of the Am. Med. Assoc.*, December 19, 1885.

A lady, aged seventy-two, was taken with severe pain just beneath the left clavicle, followed by fever, cough, rusty and at times hæmorrhagic expectoration, etc. The fever declined on the eighth day, but, instead of improving in strength, she became greatly prostrated, and her cough became convulsive and very severe. On the ninth day her breath became offensive, and two days later the expectoration, which was scanty, also exhaled a gangrenous fœtor. From this time she had a ravenous appetite, and gained strength rapidly. After a month the symptoms of gangrene gradually subsided, with occasional exacerbations, and ceased in eighteen weeks. Frequent attacks of convulsive cough, with occasional slight hæmorrhages, occurred up to the time of her death, a year later, from causes unconnected with the gangrene.

The steps toward the healing of a gangrenous cavity are well shown in the following cases:

On November 19, 1855, a man, aged forty-nine, entered the Hôpital St.-Antoine with all the symptoms of pulmonary gangrene. Improvement followed, and he left the hospital with no other symptom than dullness and moist râles in the upper part of the right side of the chest. On February 10, 1856, the patient re-entered the hospital, suffering with tetanus, and died on the following day. At the autopsy the entire upper lobe of the right lung was found brown and solid. Near the lower and posterior borders was a cavity, of the size of a pigeon's egg, having a smooth, reddened surface and without fœtid contents or odor. In the cavity opened a dilated bronchus.*

A miller, aged forty-six, suffered with the symptoms of gangrene of the lungs in the autumn of 1872, with recovery by the end of January, 1873. On October 31st of this year he was again attacked with pneumonic fever, and died on the tenth day. At the autopsy there was found in the lower and posterior portion of the lower lobe of the left lung a small cavity, one third of an inch in diameter. Into this cavity opened a small and irregularly dilated bronchial branch. A short distance up this bronchial tube was a second, very minute, cavity. Both were lined with a smooth, glistening membrane, apparently continuous with that lining the bronchus. The cavities were surrounded by a mass of cicatricial tissue, having running through it in different directions bands of fibrous tissue which were denser and tougher than the remainder. The pleura over this portion of the lung was closely adherent to the thoracic walls, and all the tissues, including the lung and chest wall, were drawn toward the cavity as to a center.†

The treatment of pneumonic gangrene, whether expectant, medicinal, or operative, must be governed entirely by the nature and surroundings of the individual case. These cases vary so much and essentially in their local and general characteristics that they can never be successfully managed by universal and inflexible rules. For therapeutical purposes we may arrange our cases in classes as follows: *a.* Cases in which the gangrenous focus can not be definitely located. *β.* Cases in which the gangrenous patch presumably occupies the walls of a pre-existing cavity which can be located. *γ.* Cases in which the gangrenous mass occupies virgin soil, is of considerable extent, has broken down into a mass of *débris*, and either remains unopened or has evacuated its contents into the bronchi, pleura, or other space. *δ.* And, finally, those cases in which the necrosis is of great extent—*e. g.*, occupying the whole or greater part of a lobe, but has not yet resulted in disintegration of the tissues.

The first class of cases are open only to medicinal treatment, as are also the vast majority of the cases in the second class, although operative interference may be allowable under exceptional circumstances. In cases of the third class medicinal measures may be all that is necessary in those in which the evacuation is into the bronchi, provided the *débris* is of a consistence to allow of its passage through the opening, but in other cases an operation will be generally necessary to effect a cure. In the last group of cases, heretofore uniformly fatal, we may well consider whether it were not possible to give the patient a chance for his life by enlarging to some extent the operative field.

In every case the stage of collapse, if it occurs, should be combated instantly with powerful stimulants. Alcoholic liquors should be given by the mouth, and hypodermatically brandy, sulphuric ether, small doses of morphine, atropine, strychnine, etc. Rectal injections of coffee and large quantities of hot water may be employed. In certain cases strophanthus, digitalis, and nitroglycerin may be of great service, and may even turn the scale in favor of the patient. External heat and counter-irritation along the course of the spine should not be neglected. These measures, if they have successfully carried the patient over the divide, should be followed up by tonics and antiseptics. Of these may be mentioned cod-liver oil, in the form of a recent emulsion, combined with the hypophosphites of lime and soda, or the chlorides of sodium and ammonium, given frequently and in small doses. The iodides of iron and potassium may be of benefit in selected cases. Strychnine should be prescribed in every case in which there is fœtid expectoration. To correct the horrible fœtor of the breath, turpentine is our most valuable remedy, and the patient's apartment should be heavily laden with its fumes.

If the gangrenous focus is located in or has formed a cavity communicating with a bronchus, the cough is severe, convulsive, and distressing; yet this cough should be allayed, if at all, with the greatest caution. In these cases, if the putrid contents of the cavity are not promptly and completely removed, ill consequences are sure to follow, and the powerful cough is Nature's effective agent for effecting this. I believe that this cough, of which he so bitterly complains, is, in many cases, the patient's salvation. Forcible inspiration will generally cause coughing and the expulsion of retained secretions and *débris*, and this should be frequently practiced. The inhalation of rarefied air, either by means of a mechanical apparatus or by residence in high altitudes, may be of benefit in the same direction, and also by causing elastic compression of the cavernous walls.

"As a therapeutical curiosity, the method of Gadbury * for evacuating lung cavities may be mentioned. He forcibly inflates the lungs with a rubber band-bag, forcing the air freely into all parts of the respiratory tract, which causes coughing and the expulsion of the accumulated secretions. Rokitansky[*] has proposed to make use of the benzoate of sodium for the same purpose. This agent is an irritant to the bronchial mucous membrane, and when inhaled in solution as a spray causes prolonged and powerful coughing, by which the fluids in the tubes and cavities are expelled, thus literally washing out the lungs."[†]

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* Aran. *Gaz. des hôp.*, 1856, No. 108.

† Schneider. *Inaug. Diss.*, Erlangen, 1876. See also Laindier, *Thèse de Paris*, 1833; Madaune, *Thèse de Paris*, 1870; Nyret, *Thèse de Paris*, 1870; *et al.*

* *Boston Med. and Surg. Jour.*, March 3, 1881, p. 202.

Patients sometimes discover for themselves that these putrid matters are more readily expelled when they assume certain positions, and when this is the case they should be directed to frequently take advantage of the fact.

Ransome,[‡] Seifert,[#] and others have employed antiseptic pulmonary injections in bronchiectasis, and the plan might be found useful in the case of gangrene with cavities. They found that after each injection the sputa lost their fœtor. One patient died after three injections—on the second, fourth, and sixth days respectively before death. Where the needle had entered the lung, the pleura at the location of the last injection, was infiltrated with blood. Only a slight pigmentation was noticeable at the site of the other injections. The punctures provoked some cough, but only a little pain.

The diet should be highly nourishing and slightly stimulating, and every effort should be made to render the processes of digestion and assimilation as prompt and perfect as possible. Regimen and nursing should be attended to with the most scrupulous care. Baths should be given at regular intervals. Comfortable woolen clothing should be worn. The apartment should be well ventilated and comfortably warmed. If the patient is confined to the bed, his position should be frequently changed. If able to take easy, interesting, and regular exercise, it should be permitted.

Turning our attention now to the more radical measures which surgery offers for the relief of pneumonic gangrene, we may lay down the following propositions: (*a*) An operation should never be undertaken in any case in which the seat of diseased action can not be definitely located. (*b*) In case the secretions and necrotic *débris* find ready exit, surgical measures should not be considered so long as the patient is improving, but if he is steadily losing ground and is closely skirting along the danger line, an exploratory operation is not only admissible but it may be urgently advised. (*c*) In those cases in which the gangrenous mass is of considerable extent and has become disintegrated, exit should be afforded the putrid matters by an external opening. (*d*) Surgical interference is imperatively demanded in those cases in which egress is not freely given to secretions and gangrenous *débris*, including detached masses of pulmonary tissue, by openings already established. (*e*) When an external opening is made it should be of a size sufficient to allow of the passage of all the contents of the cavity. (*f*) In case the cavernous walls are studded with adherent gangrenous shreds and masses, careful curetting with a guarded blade[*] might be practiced. (*g*) In case the gangrenous matters have been discharged into the pleural cavity, an immediate operation should be made. (*h*) Finally, in that terrible class of cases—happily only rarely brought to our consideration—in which the whole, or a considerable part, of a lobe is gangrenous, but without disintegration of the tissues, we may weigh carefully the advisability of ablating the affected portion of lung.[†] Should the surgeon operate under such circumstances he would encounter fearful responsibilities, but he should not hesitate to assume them should occasion require it.

The earliest reported case of pulmonary gangrene submitted to operation[‡] with which I am acquainted is the one by Harland:[#]

> A sailor had a painful fluctuating swelling just below the left nipple. This was incised to the extent of an inch and a half, with the escape of more than a pint of extremely fœtid pus, mixed with shreds of gangrenous lung tissue. A mass of dead lung protruded and was drawn out to the extent of nearly two inches, and, after three days, ablated. This piece after removal weighed nearly a pound and would scarcely go into a pint cup. A slight fistula remained for quite a while, but complete recovery eventually ensued. Two years later some shortness of breath and a diminution in the left side of the chest were the only noticeable phenomena.

Since then operations have been made by a large number of surgeons with, on the whole, encouraging success. Operative treatment in these cases has also been advocated by numerous writers who have not themselves performed operations.

An operation having been decided upon, the method of its performance next engages our attention. The gangrenous cavity or depot should be carefully located—with the aspirating needle, if possible—and the opening should invariably be made at the point where it approaches nearest the surface. Care should be taken to ascertain whether the pleural surfaces at this spot are adherent or the contrary. The tissues should be incised down to the parietal pleura and a needle thrust into the lung. If it moves synchronously with the respirations, adhesions have not formed, while they are present if the contrary prevails. If adhesions are present, the operation may be at once concluded; but if they are absent, its completion should be delayed until adhesions

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[*] See *St. Louis Med. and Surg. Jour.*, January 20, 1880, p. 59.

[†] Wells. *Jour. of the Am. Med. Assoc.*, December 19, 1885, p. 681.

[‡] *Med. Chronicle*, 1887.

[#] *Berliner k. Wochenschr.*, June 11, 1883.

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[*] I have had made a curette with a perfectly protected cutting edge and gauged to cut only to a certain depth. With this instrument it is impossible to do damage while operating in hidden cavities.

[†] Portions of the lung have more than once been successfully ablated. See Krönlein, *Berliner klin. Wochenschrift*, 1884, No. 9, S. 129; Gluck, *ibid.*, 1881, S. 647.

[‡] Local treatment of pulmonary cavities was proposed by Barry as early as 1726, Richter (*Anfangsgründen der Wundarzneikunst*) in the latter part of the eighteenth century, by Bell early in the present century, and since that time by several other writers. See Canstatt's *Spec. Path. u. Therap.*, Suppl. 1 u. 2, Erlangen, 1854; Gluck, *Berliner k. Wochenschr.*, 1881, S. 647; Koch, Langenbeck's *Archiv*, Bd. xv, Heft 3; Krönlein, *op. cit.*; Mosler, *Berliner k. Wochenschr.*, October 27, 1873, and many others.

[#] London *Lancet*, New York, 1852, vol. ii, p. 60. The operation was done in 1850.

have been secured. These may be brought about by inserting needles through both layers of the pleura and allowing them to remain until inflammation ensues,* or the wound may be filled with a caustic paste,† having in view the same object. In either case the side of the chest should be kept quiet, in order that the adhesions may the more quickly and certainly form. Adhesions of the pleural surfaces being present or having been obtained, a medium-sized trocar or electro-cautery knife should be slowly and gradually bored through the intervening structures until the cavity is reached. If the contents can freely escape, a soft-rubber drainage-tube, having a smooth extremity, should be passed to the bottom of the cavity and allowed to remain until forced out by the closure of the cavity, or until the cessation of the discharge renders it unnecessary. If detached pieces of lung tissue are found in the cavity which can not pass through the opening, as made, it must be enlarged, by dilatation or otherwise, to allow of their egress. Cleansing and antiseptic injections may be cautiously employed, but if they cause discomfort their use should be discontinued.

In those cases in which the gangrenous abscess makes its presence and location known by a swelling of the thoracic parietes the necessary operation is one of simple incision or puncture. The subsequent management of such a case will not differ from those previously considered. Should the necrotic matter have been evacuated into the pleural cavity the operation is essentially that for empyema, and requires no special consideration other than that, if possible, the incision should be made over the seat of gangrene, with, perhaps, an additional opening at the most depending part of the pleural sac. Should a piece of detached necrosed pulmonary tissue be found in the pleural cavity, it should be removed.

If it is necessary to excise a portion of the lung, the external opening should be made sufficiently large to allow free working room. If the gangrenous mass can be removed at the line of demarkation, ligatures may be unnecessary; but if the incision must be made at a higher level, they should be employed preliminary to the ablation. After the part has been removed the raw surface may be sutured so as to remain exposed in the external opening until healing by granulation has taken place.

The gangrenous depot having been evacuated, either by the spontaneous efforts of Nature or the well-directed measures of art, our attention should be directed to bringing about a certain and speedy closure of the cavity and cure of the patient. In order that this end may be furthered, there should be made a steady pressure against the cavernous walls, such as that attainable by residence in high altitudes, by the employment of an elastic abdominal bandage ‡ having an upward pressure, or by the retraction of the chest walls following resection of portions of the ribs. After hepatization has disappeared and the cavity remains open, interstitial injections of iodine may be made in its vicinity, in order that the transformation of the lung tissue into connective tissue * may lead to further compression by cicatricial contraction.

163 State Street.

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* Fenger and Hollister. *Am. Jour. of the Med. Sci.*, October, 1881, p. 386.

† Quincke. *Berliner k. Wochenschr.*, April 30, 1888, S. 349.

‡ See Wells. *Cincinnati Lancet and Clinic*, October 15, 1881, p. 348.

* Andrews. *Jour. of the Am. Med. Assoc.*, September 5, 1885, p. 262. The "injection of tincture into the lung tissue is a proceeding free from danger; . . . no reaction follows; no pain is felt except when the chest wall is being punctured; there is not even a cough unless the fluid gets into a bronchial tube."

RESEARCHES UPON THE ÆTIOLOGY OF IDIOPATHIC EPILEPSY.

A PRELIMINARY COMMUNICATION.

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AND E. E. SMITH, Ph. D.

It is the aim of this paper to present the results of a research upon epilepsy that has been in progress during the past winter. This research was originally undertaken with a view to studying the relation of uric-acid excretion to the epileptic paroxysm—a line of inquiry brought to our notice by the recent publications of an English writer, Haig.† According to this author, the *grand mal* seizure is determined by an excessive accumulation of uric acid in the blood. In the study of this question our results were not confirmatory of the view of Haig. Certain observations, however, of another kind, suggested to us the possibility of a causal relationship in some cases between putrefactive processes in the intestine and epileptic seizures. As a consequence we were led to undertake the research that is here recorded and with which the greater part of this paper is concerned. Evidently the planning of a study of this character involves the assumption that the discharge of nerve force from the cortex which constitutes the epileptic seizure may be in some way conditioned by the quality of the blood by which the cerebral elements are nourished. The idea that epileptic paroxysms may be related to toxic substances in the blood is not a new one, the clinical aspects of epilepsy being such that they have suggested a dependence of this kind to some authors who have not been satisfied with the purely mechanical explanation of the epileptic seizure. Thus Flint ‡ says: "In a large proportion of the cases of epilepsy no sources of centric or of eccentric irritation are apparent. That under these circumstances the epileptic paroxysms are due to the action of an internal and at present unknown toxical agent seems to me the most rational hypothesis." That toxic substances produced in the intestine may sometimes determine the occurrence of epileptic seizures is a possibility that occurs to one on considering the cases of epilepsy in which the symptoms of disordered digestion, often from an error in diet, are associated with an unusual frequency of the seizures. The observations which we have made upon intestinal putrefactive processes in epileptics are based upon a study of the urine of such cases. As we shall explain further on at greater length, certain substances in the urine—namely, the ethereal sulphates—have been shown to be derived from putrefaction in the intestine, and the extent to which such putrefaction occurs may be inferred, bearing in mind certain precautions, from the quantity of these substances in the urine. These substances have been studied by us in thirty-one different cases of epilepsy, most of the cases being unquestionably idiopathic in nature, according to the generally accepted meaning of this term. In the majority of these cases the uric-acid excretion also has been studied. The results that have been derived from this inquiry may be presented under the following titles :

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† *Uric Acid as a Factor in the Causation of Disease*, 1892.

‡ *Practice of Medicine.* Sixth edition, p. 825.

First. Synopses of the clinical histories of the cases of epilepsy that form the basis of this paper, together with the tabulated results obtained from analysis of the urine.

Second. Conclusions relating to the excretion of uric acid in epilepsy.

Third. Conclusions relating to the occurrence of intestinal putrefaction in epilepsy.

Case I.—J. V. S., aged fifty-two ; weight, one hundred and seventy pounds. First *grand mal* seizure occurred during night in patient's forty-third year. Consisted of a general convulsion without aura, biting of tongue, or passage of urine, followed by active delirium and deep sleep. *Grand mal* seizures increased gradually in frequency ; they now recur three or four times a month. Two years after first seizure developed *petit mal* attacks, of which there are several a week. Slight loss of mental power. General health fair. Has always been predisposed to diarrhœa and dyspepsia.

Case II.—M. R., female, aged twenty-four ; weight, one hundred pounds. Has had typical *grand mal* paroxysms for four years, two to three every month. No known cause. Paroxysms have been diminished in frequency (one to two months) under bromide treatment. Seizures usually occur just before, during, or after menstrual period. General health feeble. Marked anæmia. Intercostal neuralgia. Frequent attacks of gastric pain after food. Occasional constipation.

Case III.—M. M., aged twenty-six. *Grand mal* seizures for several years. Developed without known cause. At first had only three or four seizures a year ; now has about one a month, usually during or just after menstrual period. Epigastric aura. Bites tongue. Clonic spasm general. Seizure followed by stupor. No appreciable mental impairment. General health good. Digestion usually good. Seldom constipated.

Case IV.—E. E., aged twenty-six ; weight, one hundred and sixty (?) pounds. Good health until two years ago. At the time was struck upon the right side of the head by the falling of a brick. No loss of consciousness resulted, but a scalp wound was made. About two months later had the first epileptic seizure. Since that time there have been many seizures, and at the present time there are many seizures weekly. Frequently there are many seizures in succession. The convulsions are general. Much mental impairment. General health good. No constipation or digestive disorder.

Case V.—C. C. P., male, aged sixteen; weight, one hundred and thirty-five pounds. Epileptic convulsions since third year. Early history obscure. Paroxysms said to have come on without cause. Much mental impairment. Seizures two to four a week; uncontrolled by bromides. No aura. Deviation of eyes to right; clonic spasm more marked on right side. General health excellent. No evidences of indigestion. No constipation. Suspicion that the disease may have been of organic origin.

Case VI.—C. T. B., male, aged thirty-four ; weight, one hundred and fifty pounds. Seizures commenced during early childhood without known cause. Have continued without change in frequency or character. Much mental impairment. Seizures, five or six a month ; uncontrolled by bromides. Typical *grand mal* seizures. Clonic spasm general. Sensory aura in small proportion of seizures (one in ten). General health robust.

Case VII.—F. G. S., aged thirty. First *grand mal* seizure at age of ten (without known cause?). Now has two or three seizures a month. Often these are followed by maniacal excitement. General health good. Great mental enfeeblement. Is apt to become constipated. Two months ago became constipated, and the *grand mal* seizures became more frequent and severe during this time than usual. Does not suffer from dyspepsia.

Case VIII.—E. M. B., aged fifty. For more than twenty years has had infrequent typical *grand mal* seizures, which developed without known cause. Considerable mental excitement before and after seizures. Has been free from seizures as long as three years. At present has two or three seizures every fortnight. Great mental enfeeblement. General health excellent. Does not suffer from dyspepsia or constipation. Has a uterine fibroid. This began to grow rapidly five years ago, and the seizures have been more frequent ever since.

Case IX.—P. S., male, aged sixty-three; weight, one hundred and sixty pounds. One uncle epileptic. Rugged health until eighteen years ago. Then a sudden mental shock was followed by first *petit mal* seizure. *Petit mal* seizures increased gradually in frequency from one a month to five a day in 1888. Then first *grand mal* seizure. *Grand mal* seizures of typical character at night; loss of consciousness, with falling, but without true convulsive movements, during day. Falling seizures about one a day. On bromides since first *petit mal* seizure. Seizures much more frequent when bromides discontinued. Gastric dyspepsia since bromides begun. Transient glycosuria at times. General health excellent. Very little mental impairment. Bowels regular usually.

Case X.—S. S., aged twenty-nine; weight, one hundred and fifteen (?) pounds. First epileptic seizure occurred at age of eighteen, without known cause. The first seizure coincided with the menstrual period. Since then seizures have been frequent. Several typical *grand mal* seizures occur at present in the course of a week. Patient has a vague epigastric aura. Always cries out. Has occasional *petit mal* seizures. Mental condition good. General health good. Bowels regular.

Case XI.—E. B., aged forty-five ; weight, one hundred and forty (?) pounds. Patient had the first *grand mal* seizure fifteen years ago. Came on without known cause. Received a severe burn of the right hand in the first seizure. Has had ever since many *grand mal* seizures monthly, and usually several *petit mal* seizures. No relation of the seizures to menstruation. During past year seizures have been somewhat less frequent than formerly. Little or no mental impairment. General health excellent. Neither indigestion nor constipation.

Case XII.—K. S., aged forty-three ; weight, one hundred and ten pounds. First seizure at age of seventeen, without known cause. Now has about one seizure a week, and several *petit mal* seizures daily. No aura. No relation of *grand mal* to menstrual periods. Much mental impairment. General health fair. Is not dyspeptic.

Case XIII.—K. M., aged twenty-four ; weight, one hundred and sixty (?) pounds. Has had typical *grand mal* seizures since her eleventh year. These came on without known cause. Seizures were very frequent from the beginning (several a week). At present patient is having from six to twelve seizures daily. Often one seizure occurs directly after another. Both clonic and tonic spasm are usually rather more marked upon the right side. Stupor lasts long after seizures. Great mental impairment and continuous dullness. No relation of seizures to menstruation. General nutrition good.

Case XIV.—B. F., aged nineteen. First *grand mal* seizure at the age of ten without known cause. Seizures frequent from the first. Menstruation at thirteen. Seizures especially frequent about menstrual period. Now has several seizures daily (three to five), sometimes as many as twelve. No distinct aura. Patient utters a cry and falls. A short period of general rigidity is followed by clonic spasm, chiefly of left arm. After this, patient grows violent and abusive for a short time. Seizures vary much in severity and duration. Mental power not greatly impaired. General health good. Chronic constipation.

Case XV.—K. A., aged twenty-five. First *grand mal* seizure at age of thirteen, without known cause. First menstrual period about a month after first seizure. Seizures from two to twelve a month; severe and typical *grand mal*. More frequent at menstrual period; less frequent now than formerly. Considerable mental impairment. General health good. Usually constipated.

Case XVI.—S. C., aged thirty-one; weight, one hundred and twenty-five pounds. First *grand mal* seizure at fifteen, without known cause. Seizures increased gradually in frequency; now has eight to ten seizures a month. Seizures are rather more frequent about the menstrual period. General health good, with the exception that patient suffers from dysmenorrhœa. Slight mental failure. Is not troubled with constipation or indigestion.

Case XVII.—K. M., aged twenty-two; weight, one hundred and thirty (?) pounds. Has had *grand mal* seizures since her thirteenth year. Seizures average one or two a month. They usually occur just before or during a menstrual period. No aura. No *petit mal* seizures. Mental condition apparently little impaired. General health excellent. Is usually constipated.

Case XVIII.—M. D., aged thirty-five; weight, one hundred and thirty pounds. First *grand mal* seizure in seventeenth year, without known cause. At one time had ten to twelve seizures a month; now has about seven seizures a month. Seizures are a little more frequent at menstrual periods. Has two or three *petit mal* seizures a month. General health good. Considerable mental failure. Is not troubled with constipation or indigestion.

Case XIX.—R. M., aged seventeen. First *grand mal* seizure at age of thirteen, without known cause. Seizures have been frequent ever since this time, and now occur from three to five times a week. Menstruation began at the age of fourteen, and has always been scanty and irregular. Now suffers from amenorrhœa. Mental condition good. General health good. Does not suffer from indigestion or constipation.

Case XX.—M. J., aged thirty-three; weight, about one hundred and forty pounds. First seizure occurred during eleventh year without known cause. Since then has had many *grand mal* seizures monthly until recently. Has had as many as sixteen seizures a day; now has one or two in the month. General health good. Intelligence somewhat impaired. Is troubled with constipation, but seldom has indigestion.

Case XXI.—D. K., aged thirty-seven; weight, about one hundred and thirty pounds. At age of fourteen had the first *grand mal* seizure, which came on without known cause. Since that time has been having from six to ten severe *grand mal* seizures, with prolonged loss of consciousness, in the month. Seizures are rather less frequent now than formerly. They occur with especial frequency at the beginning of the menstrual period. Is much troubled with constipation. Is not troubled with indigestion.

Case XXI.—A. W., female, aged thirty-seven. *Grand mal* seizures since age of thirteen. First seizure occurred about time of first menstruation, but referred to fright. Four or five paroxysms monthly, three or four of them usually within a few days of period. Considerable mental impairment. General health good. No digestive disorders. No constipation. Bromide treatment.

Case XXIII.—F. K., female, aged thirty-four. Seizures commenced at the age of eighteen without known cause. Has both *grand* and *petit mal* paroxysms, the former especially at the menstrual period. Three to four *grand mal* seizures a month. Three to five *petit mal* seizures a week. *Grand mal* seizures formerly more frequent than now; appear to be partly controlled by bromides. General health good. Does not suffer from indigestion or constipation.

Case XXIV.—A. D., female, aged thirty-nine; weight, one hundred and eighty (?) pounds. Severe typical *grand mal* seizures began nine years ago at a time of grief and anxiety. Seizures especially apt to occur at menstrual period; three or four a month; formerly one or two a month. (Constipation and indigestion marked.) Mental state good. General health robust. No bromides for five months.

Case XXV.—B., female, aged thirty-one. *Grand mal* paroxysms began twelve years ago without known cause. Three or four seizures a month; formerly less frequent. Seizures especially apt to occur during the week after menstruation. Mental condition good. General health robust. Suffers from constipation and indigestion.

Case XXVI.—M. H., aged thirty; weight, one hundred and ten pounds. Seizures of typical *grand mal* coming about three years before without known cause. Second seizure about one year after first; third, about six months after second. Now has one seizure about every month. Non-menstrual. Aura and cry before seizure. Tonic followed by general clonic convulsions. Mental condition good. General health good. Does not suffer from constipation or indigestion. Severe bromism at one time.

Case XXVII.—Julia Hackett, aged fifty-nine; weight, one hundred and sixty-five (?) pounds. Severe and typical *grand mal* seizures since her ninth year. First seizure occurred about two weeks after a fright received from falling from an apple tree. Slight scalp wound at this time. Has about one seizure a month at present; formerly had several a month. No aura. Onset of seizures very sudden. Period of tonic spasm very short; spasm clonic almost from first. Duration, two to three minutes. Mental condition apparently unimpaired. General health robust. Bowels regular. No symptoms of dyspepsia.

Case XXVIII.—M. R., aged twenty-four; weight, one hundred and ten (?) pounds. Severe *grand mal* seizures began at age of five, without known cause, but early history is obscure. During past four years has had from five to ten severe *grand mal* seizures a month. Especially frequent just before or during menstrual period. No aura; screams and falls suddenly; long period of rigidity (two minutes) before general clonic spasm comes on. Great mental enfeeblement. General health good. Appetite good. Frequent constipation. No dyspeptic symptoms.

Case XXIX.—D. H., aged twenty-seven; weight, one hundred and three pounds. When seven years of age began to have *petit mal* seizures, which developed without known cause. Seizures continued for several years, ceased spontaneously, and then recurred. Has from three to ten seizures a week. Usually a painful epigastric aura an appreciable time before the seizure, which consists of temporary loss of consciousness, during which there are automatic movements. After seizure, patient is pugnacious. Seizures diminished in frequency under influence of bromides. Slight mental weakness. General health fair.

Case XXX.—R. K., female, aged thirty-six; weight, ninety-nine pounds. Good health until twelfth year. Then first *petit mal* seizure without apparent cause. Several *petit mal* seizures daily. Aura of general painful sensation all over her, with accumulation of gas in intestines, arrested by inhaling amyl nitrite. Great increase of attacks on removal of bromides. Seizures most frequent at menstrual period. Rarely *grand mal* seizure. General health fair; suffers from constipation.

Case XXXI.—J. K. S., aged thirty-three; weight, one hundred and thirty-eight pounds. Was in good health until two years ago, when he had a slight *petit mal* seizure; sudden loss of consciousness, with pallor, while in sitting posture and talking. Duration of first seizure, a few seconds only. Second seizure, six months after first and slight. Since then seizures much more frequent and more severe. Loss of consciousness and pallor, followed by temporary mental confusion. One hundred and fifty-one seizures in first three months of 1892. Mental power considerably impaired. General health good. Bowels regular.

(*To be continued.*)

GLUTEAL ANEURYSM.

LIGATURE OF THE INTERNAL ILIAC ARTERY.*

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The following case is reported as a contribution to the operative statistics of this rather uncommon variety of aneurysm:

T. L. W., laborer, married, aged thirty-five, while carrying a heavy load up the steps of his house felt a sudden and severe pain in the left hip and, at the same time, a sensation as though "something had given way." A few days later a pulsating swelling was noticed in the left gluteal region, the pain continuing. Early in August, 1891, six weeks after the appearance of the tumor, the case was seen by the writer at the request of the attending physician, Dr. J. W. Johnston, of Memphis.

A tumor as large as a small orange, with forcible expansile pulsation and pronounced bruit, occupied the left gluteal region just over the sciatic notch. No pulsation could be felt by rectal exploration. There was no history of traumatism or syphilis. The patient stated, however, that while working on the street railway tracks he was accustomed to sit on the rails for hours at a time.

Treatment by large doses of potassium iodide, rest in bed, and compression of the tumor had been tried, but without avail.

As the pain was severe and the tumor rapidly increasing in size, an early operation was advised as giving a better chance of success than one undertaken after the bodily powers had been sapped by long-continued pain and confinement and the pelvic structures encroached upon by the enlarging sac. He was accordingly taken to St. Joseph's Hospital and the operation done on the 3d of September with the assistance of Dr. Johnston, Dr. Willett, Dr. Krauss, and Dr. Rudisill. An examination of the heart, made before administering ether, showed the existence of a mitral systolic murmur, but, as there was no evidence of faulty compensation, it was decided, after consultation, to proceed with the operation.

The abdomen was opened, with the usual aseptic precautions, by a median incision extending from the umbilicus to the pubic bone.

The intestines having been carefully drawn out of the cavity and covered with hot sponges, the internal iliac artery was sought for and located by following the external iliac up to the bifurcation of the common trunk. It was further identified by compressing it and noting the effect on the aneurysm. The peritonæum overlying the artery was raised and incised between two forceps. The ureter, which at once came into view, was drawn to the inner side and an aneurysm needle armed with stout braided silk passed around the vessel from within outward. The abdominal wound was closed with silver sutures and the usual dressing applied. The wound was not disturbed until the eleventh day, when union was found to be complete, and the sutures were removed. After ligature of the artery faint pulsation in the tumor persisted, owing to the freedom of the collateral circulation. Next day pulsation was still more perceptible, and, patient's pulse being full and strong, he was ordered small doses of tincture of veratrum viride. Moderate intermittent pressure was applied to the tumor. One week after the operation the tumor was firmer and pulsation less apparent. Consolidation steadily progressed, and by October 1st, though a slight impulse could still be felt, the tumor was very hard and had undergone considerable diminution in size. The patient, when he lay on it, said that it felt "like lying on a base-ball." About the middle of October the heart lesion, which had previously caused no trouble, began to give rise to alarming symptoms.

The face and feet began to swell, fluid accumulated in the serous cavities, and dyspnœa was complained of. In spite of treatment, including the free use of digitalis, his condition rapidly grew worse, and death occurred on the 12th of November from œdema of the lungs. Faint pulsation in the tumor persisted up to the date of death. Unfortunately, an autopsy could not be obtained.

Diuretin.—"Professor Demme, in a clinical report of the Berne Children's Hospital, mentions that he has successfully employed the so-called diuretin or salicylate of theobromine and sodium in several cases of dropsy in which calomel and hot baths did not seem suitable and where ordinary diuretics had not proved beneficial. He finds that it may be regarded as a safe drug for children above a year old, and one that is quite free from unpleasant effects. He believes the diuretic effect is occasioned mainly by action on the renal epithelium. In scarlatinal nephritis severe dropsy coming on after the acute stage of nephritis is more easily reduced by diuretin than by any other means. In cases of mitral insufficiency, with insufficient compensation, ascites and anasarca are best combated with the help of diuretin after the compensatory disturbance has been reduced by digitalis. As to dosage, children from two to five years of age may be ordered from eight to twenty-five grains during the day, and children of from six to ten years as much as from twenty-five to forty-five grains, in divided doses of course. The total amount for the day is generally dissolved in four ounces of water, with ten or twelve drops of brandy and forty grains of sugar. In some cases the administration was continued for some weeks without any signs of either a cumulative action or of diminished therapeutical effect being seen. In one of the cases of scarlatinal dropsy, of which details are given, the effect of diuretin was very striking. While the child was upon acetate of ammonia the urine amounted to only nine or ten ounces a day, and contained 0·15 per cent. albumin, according to Esbach's scheme of measurement, with a considerable number of granular casts and epithelium undergoing fatty degeneration. The change of treatment produced an immediate effect, the urine in the three days amounting to nearly three times the quantity previously measured and containing only half the former quantity of albumin, with very few casts, and in a week neither albumin nor casts could be found."—*Lancet.*

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* Read before the Memphis Medical Society, April 19, 1892.

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THE BACILLUS OF SOFT CHANCRE.

ABOUT three years ago *La Riforma medica* published a description by Dr. A. Ducrey of a microbe that he had found in soft chancres, and that he regarded as the cause of that disease. He inoculated, with antiseptic precautions, pus from soft chancres in a series of five or six subjects. While the sores resulting from the first inoculations contained numerous microbes, he did not find more than a single one in the last. The bacillus was short and thick, having rounded extremities, often with a lateral groove, and was either isolated or in chains. He was not able to cultivate it in any of the media employed in the laboratories.

In the June number of the *Annales de dermatologie et de syphiligraphie* Dr. Pusey reports the discovery by Dr. Unna of a bacillus that seems to be the pathogenic agent of the soft chancre. It occurs in the form of chains of two or more bacilli, and is most numerous in ulcerated tissue, though it is found between the cells of the environing tissue. It may be isolated in microscopic preparations by coloration with methylene blue, and then decolorized with styrone or ether and diluted glycerin.

This is the only bacillus encountered, and Unna has found it in every soft chancre excised and examined by him. It is found in the tissue alone, unassociated with other microbes, being distributed in a peculiar manner, and it is not found in simple ulcers or in initial indurated sores. Apparently no effort has been made by Unna to cultivate this organism, or to demonstrate its pathogenic character by inoculation. Ducrey's inoculation experiments were a repetition of the oft-repeated experiments of inoculating the pus of a soft chancre, and they can not be regarded as demonstrating the pathogenic character of the micro-organism he found. In a recent number of the *British Medical Journal* there is a note stating that Quinquaud has confirmed Unna's discovery, having found a bacillus present in prodigious numbers in the lymphatics and intercellular spaces. The question is well worth further investigation, if only to demonstrate that the micro-organism causing soft chancre is but a more virulent form of some well-known bacillus.

CIRRHOSIS OF THE LIVER IN CHILDHOOD.

IT is a common belief that cirrhosis of the liver is a disease of adults only and is a result of the excessive use of alcohol. As a matter of fact, it is not uncommon in childhood and is seen even in infancy. It is most frequent between the ages seven and thirteen, and is much more common in boys than in girls. In the *British Medical Journal* for April 23d Mr. Jollye gives an analysis of one hundred and twelve cases in persons under eighteen years of age. He finds that the part played by alcohol and syphilis in its causation is a much smaller one than was formerly supposed. Of these cases, but nineteen per cent. were clearly due to alcohol and sixteen per cent. to syphilis. Tuberculosis was the next most frequent cause, and malaria accounted for a few cases. The exanthemata seemed to be an exciting cause in a considerable number of instances. Kline has reported pathological examinations in eight cases of acute interstitial hepatitis in scarlet-fever cases. The same condition occasionally occurs also during the course of measles. In none of the cases reported is it stated whether the child had alcoholic stimulation, and no mention is made of the diet. The part played by the disease, by alcohol, or by diet in patients who are afterward affected with cirrhosis is, therefore, very uncertain.

The symptoms are, as a rule, very obscure. Failing health, with no adequate cause, associated with epistaxis or other hæmorrhages, and the development of nævus-like growths, with occasional attacks of jaundice, should lead to an examination of the liver. In rare instances there is a high temperature accompanied by rapid pulse and respiration, rendering the diagnosis from tuberculosis or typhoid fever difficult. The severer symptoms frequently disappear under treatment, but after a time they invariably reappear, for the disease is progressive and always terminates fatally. Its average duration is three years. A general tonic treatment seems to be most efficient, with special treatment for individual symptoms as they arise.

MINOR PARAGRAPHS.

UROHÆMATOPORPHYRIN IN THE URINE IN CHOREA AND ARTICULAR RHEUMATISM.

DR. A. E. GARROD, in an article in the *Lancet* for April 9th, refers to Dr. McMunn's discovery of urohæmatoporphyrin in the urine of sufferers from a variety of morbid conditions, especially of its abundance in that of rheumatic patients, and states that he, as well as Le Nobel, has found the substance in almost every case of rheumatic fever in which he has looked for it. He has found the pigment in the urine of fourteen out of twenty patients with chorea, the quantity apparently bearing some relation to the severity of the case. Five of these patients had definite personal histories of articular rheumatism. He concludes from this that the frequent occurrence of this pigment in the urine of choreic patients affords evidence that one at least of the perverted chemical processes that accompany rheumatic attacks is at work in chorea also, and that it may ultimately be found that the presence or absence of this pigment affords a means of distinguishing cases of chorea due to the rheumatic taint.

HYSTERICAL PYREXIA.

COMPARATIVELY recently Dr. Boulay, in an article on hysterical fever, referred to the cerebral thermic centers described by Eulenberg, Landois, Aronsohn, Sachs, Ott, and Girard—namely, certain areas in the neighborhood of the corpus striatum, the optic thalamus, and the point of decussation of motor fibers in the medulla oblongata, excitation of which stimulates the production of heat; also two other areas in the cortex, near the posterior extremity of the fissure of Sylvius, excitation of which produces depression or loss of heat. The former centers are thermogenic and related largely to the muscular motor paths; the latter are thermotaxic, or inhibitory. Boulay regards the phenomena of hysterical fever as depending upon a functional paralysis of these latter rather than upon an overstimulation of the former centers. He considers that such disturbance may readily be made in hysteria with far greater precision and limitation than the disturbances produced by experimentation or even by disease. He divides such cases into those in which the pyrexia is the leading or only symptom and those in which with the fever there are phenomena simulating visceral affections more or less closely. Dr. J. O. Affleck refers to Boulay's article in a report of such a case in the *Edinburgh Medical Journal* for August. He believes that daily rises of bodily temperature may exist over a lengthened period, wholly dependent upon disturbed nervous influence, and that, besides a careful observation of such patients, regular weighing and frequent urea estimation are necessary to show that no excessive tissue waste is going on.

SYPHILIS IN NINEVEH AND BABYLON.

In *Le Progrès médical* for July 16th there is a *résumé* of a brochure by F. Buret on an interesting legend that a scribe of Sardanapalus had engraved in cuneiform characters on a brick that is now in the British museum. Istar, the goddess of illicit love, fertility, and war, the mother of the gods and of men, seduced by the lustiness of Nimrod, had solicited that hero to take her as his wife. He ungallantly refused and continued to hunt in the woods with his comrade, Eabani, a male himself, for he also could uninterruptedly employ six days and seven nights in amusing himself with the *la lù* of his sweetheart. Outraged and indignant, Istar demanded that her father, Anu, should send the sacred bull against this rebel. But Eabani had no fear of ferocious beasts, and, seizing the bull's penis, threw it at the goddess's face. Istar's fury made all the planetary system tremble, and, after twelve days of struggling, Eabani was struck by death. Nimrod was afflicted with a loathsome leprosy that made his hair fall out, and his body was covered with scaly patches, and there were pustules on the phallus that was adored at Babylon. He descended into hell and was purified by the fountain of life. The author has given in a former work what he considers proof of the existence of syphilis among the ancients; and he finds in this legend of the punishment of Nimrod confirmation of all that he has written on the subject.

THE MECHANISM OF CONCUSSION OF THE BRAIN.

In *Brain*, part i of volume viii, there is a paper by Dr. Alexander Miles supporting and confirming the conclusion published by Duret, that the group of phenomena commonly spoken of as "concussion of the brain" is the result of a temporary anæmia of that organ. This anæmia is the reflex result of stimulation of the restiform bodies, and perhaps of other important centers in the region of the bulb, produced by the wave of cerebro-spinal fluid which rushes through the aqueduct of Sylvius and the foramen of Magendie from the subarachnoid space of the brain to that of the spinal cord when a severe blow is dealt over the skull. In accordance with the laws of hydrostatics this cerebro-spinal wave will disturb the equilibrium of the ultimate nerve cells throughout the central nervous system. The hæmorrhages found throughout the brain substance and on its surface are to be ascribed to the recession of the cerebro-spinal fluid, which naturally supports the blood-vessels of the cerebrum. These petechial hæmorrhages are not the proximate cause of the symptoms of concussion, but are rather to be looked upon as an index of the force that produced the injury.

THE EVILS OF MEDICAL EXPERT TESTIMONY.

In a paper published in the July number of the *New York Medical Examiner*, Dr. B. Sachs has called attention to some of the evils attending the methods of eliciting medical expert testimony in our courts at the present day. The principal evils are that the experts are called by the parties to an action instead of by the Court itself; that the medical testimony is elicited on verbal examination and cross-examination in court; that the object of such cross-examination is not so much to prove that the data upon which a judgment was founded are wrong as that the person who has passed this judgment has improper motives for appearing in the case or is ignorant of, or has possibly forgotten, some facts, for instance of minute anatomy, that are entirely irrelevant to the case. The author suggests that a law be enacted that will reform the present condition of affairs, and that the expert should be called by the Court, so as to secure impartial testimony and unbiased judgment.

A CUT-OUT FOR ELECTRIC-LIGHT CIRCUITS USED IN ELECTROTHERAPEUTICS.

Dr. W. S. Hedley, in the *Lancet* for April 9th, calls attention to the danger of the fuse "cut-outs" ordinarily employed in an electric-light circuit, as they are considered safe if they act within from five to ten per cent. of the normal current. For instance, a fuse set to break at 1 ampère, would vary from 1·1 to 0·9, a variation amounting to 100 milliampères in 500. The necessity for a device that would automatically break a small current with unfailing exactness, or shunt the greater portion of any sudden influx through another circuit, has resulted in an instrument that breaks at 500 milliampères. The two ends of a copper solenoid dip into two mercury cups, and when the current reaches the predetermined amount the solenoid is "sucked over" by (*i. e.*, drawn back upon) a fixed iron core. The solenoid is pivoted at the bottom, so that, as soon as it deviates a little from the center, it drops by the force of gravity, carrying its ends out of the mercury and so breaking the circuit.

SELF-MUTILATIONS BY GENERAL PARALYTICS.

The Paris correspondent of the *Lancet* remarks upon the accusations, mostly false, brought against attendants of patients affected with paresis. M. Vallon, he says, has recently read a paper in which he calls attention to the constant state of agitation in such patients, whose upper and lower limbs are never still. Others occupy their time in alternately buttoning and unbuttoning their clothes, dressing and undressing, while others, again, tear their clothing or sheets. These latter patients may, when confined to bed, inflict more or less extensive injuries upon themselves without their attendants' knowledge thereof. In one case observed a long, deep wound had been made in the thigh by the nails of the hand, in another the testes had been laid bare, and in another a part of the nose was lost. Constant grinding of the teeth is common, entailing wearing down. Another habit is that of constantly sucking the lips, a finger, a sheet, a pillow, or some other object. These cases demand constant and watchful care.

THE SURGEON-GENERAL'S DEFINITION OF "REGULARITY."

The term "regular" as applied to medical instruction has been passed upon by no less an authority than the Surgeon-

General of the army. The Army Regulations contain a paragraph, respecting the qualifications of medical candidates under certain circumstances, in which it is stated that those persons must present proof that they have been graduated by a regular medical college. A member of the Iowa Homœopathic Medical Society addressed an inquiry to the Surgeon-General, asking for a definition of the term regular in that relation. The following answer was given: "The term regular as used in paragraph 1544 of the Army Regulations is used in its most comprehensive sense as indicating a college well equipped and prepared to cover the whole ground of the science and art of medicine in its teachings, and requires not less than a three years' course of study to secure its diploma."

FATAL HÆMORRHAGE CAUSED BY A SLOUGHING BUBO.

A RARE case of fatal hæmorrhage caused by a sloughing inguinal abscess is reported by Dr. John Homans in the *Boston Medical and Surgical Journal* for July 28th. A man noticed a bubo in the left groin in November, 1891, but would not allow it to be opened. It ruptured on December 8th, a slough separated on January 15th, and there was bloody oozing on March 19th that became a hæmorrhage on the 21st. The patient insisted on following his occupation from the time the bubo appeared. He was taken to the hospital on the 21st of March, and the femoral artery was ligated on each side of the slough in its wall. Transfusion and stimulants were applied, but he died in two days.

NERVOUS DISEASES IN ANTIQUITY.

ACCORDING to a recent French work on this subject by Tornéry, says *Le Progrès médical*, Celsus showed the difference between hysteria and epilepsy, and Aretæus described hysteria in the male. At that distant epoch a popular remedy for nervous diseases was the testicles of animals—taken, it is true, by the digestive tract rather than under the skin, as recommended by Professor Brown-Séquard.

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending August 16, 1892:

DISEASES.	Week ending Aug. 9.		Week ending Aug. 16.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	0	0	0	0
Typhoid fever	41	10	27	4
Scarlet fever	44	5	46	4
Cerebro-spinal meningitis	2	1	1	1
Measles	151	6	107	9
Diphtheria	56	24	49	12
Small-pox	14	3	16	7
Varicella	0	0	0	0
Whooping-cough	0	0	0	0

The Death of Dr. Thomas Godrich, of Gravesend, Long Island, took place on July 27th. He was a highly qualified English physician, having been born in London in 1838. He was for many years a practitioner at Fulham and was a medical officer of its southern district, surgeon of the Second Regiment of City of London Volunteers and of the Royal Humane Society, also visiting surgeon to the Abbey Wood Dispensary. He came to this country in 1885.

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from August 7 to August 13, 1892:*

ALEXANDER, CHARLES T., Colonel and Assistant Surgeon-General, is granted leave of absence for twenty-one days, to take effect upon the completion of the bond of HARRY O. PERLEY, Captain and Assistant Surgeon.

PAGE, CHARLES, Colonel and Assistant Surgeon-General. The leave of absence granted is extended one month.

GORGAS, WILLIAM C., Captain and Assistant Surgeon. The extension of the leave of absence granted is further extended twenty days.

SMART, CHARLES, Major and Surgeon, is granted leave of absence for four months.

Proceedings of Societies.

NEW YORK SURGICAL SOCIETY.

Meeting of April 13, 1892.

The President, Dr. ARPAD G. GERSTER, in the Chair.

Supramalleolar Osteotomy for Traumatic Talipes Varus.—Dr. WILLY MEYER presented a patient upon whom he had done this operation, along with a cast of the patient's leg, showing the deformity before operation.

The patient was a lad, eighteen years of age. Nine years ago, in sliding down the banisters in the public school, his right leg was caught between two of the vertical bars. He sustained a fracture of the right leg above the ankle joint, somewhat higher than in the ordinary Pott's fracture. The injured member was put up in a splint by a physician and kept there for six weeks, by which time the bones had united with the deformity shown in the cast, which could be called, according to the speaker, traumatic talipes varus, if put in contrast with the so-called traumatic talipes valgus or flat-foot. The lower fragments were so much displaced inwardly that the patient could only walk on the outer side of the foot. After he had walked on the foot for a year it had begun to be painful. He had then been treated for some time in the Hospital for the Ruptured and Crippled. On the 16th of July last the speaker had operated upon the leg at the German Hospital, making a transverse section of the bones with the chisel about two inches above the malleoli. The wounds were dressed, and the leg put in a plaster splint in an over-corrected position. The splint was removed after ten days and the position corrected. A new splint was then applied and kept on for five weeks. The patient then began to walk, and soon resumed his occupation. Now he could walk many miles without pain. The present position of the foot showed but little deformity, with good function.

Dr. L. A. STIMSON objected to the term talipes varus in this case, as the bones of the foot were not involved. He thought the term misleading and apt to be confusing. He would rather call it a deformity after fracture of the bones of the leg. He congratulated Dr. Meyer on the result.

Excision of Cirsoid Aneurysm of the Temporal Region.—Dr. MEYER also presented a man, aged fifty-seven years. Ten years ago he had been hit with a stone, had become unconscious, and had been taken in an ambulance to Roosevelt Hospital, where a wound in the right temporal region had been dressed. He had not remained long in the hospital. Ten weeks ago he had presented himself at the German Hospital on account of a double inguinal hernia. The speaker, observing that the patient had quite a large cirsoid aneurysm in the right temporal region, advised its removal, as it was a source of danger. An operation was performed on February 15, 1892. Dr. Meyer, having first tied the right external carotid artery, made an incision from the top to the bottom of the tumor. In spite of the ligature of the external carotid, however, the hæmorrhage was so severe as to require the use of Esmarch's bandage around the head, which at once stopped the hæmorrhage and rendered the rest of the operation easy. After the removal of the whole tumor and the ligation of all the vessels, the wound was closed and healed in ten days under one dressing. The speaker stated that in cases of this kind the whole tumor might be removed, as in this patient, or that a large ellipsoid piece might be cut out of the mass of enlarged arteries, of course with the help of Esmarch's bandage, and then all the divided vessels tied. The wound should be sutured and dressed before the elastic band was removed.

Dr. J. D. Bryant had operated in one case twice. The operation had not been successful. He had then made a horseshoe incision in the temporal region of the bone, and had tied all the vessels he could find in the line of incision, allowed the flap and surface to granulate, and then placed the flaps in position for union, which promptly took place. The operation had proved successful.

Dr. Kammerer desired to call attention to the use of the platinum wire in the treatment of large cirsoid aneurysms. When only moderately heated, it cut through the tissues very slowly and controlled hæmorrhage very effectively. He recalled a case where the tumor was very large and situated on the back, and the patient had been refused an operation. By the use of the wire the tumor was completely removed in two or three sittings. The speaker felt sure that a cutting operation would have proved fatal.

Complicated Pott's Fracture.—Dr. Stimson, who on two previous occasions had presented similar cases to the society, showed a man, twenty-six years old. On February 23d last a barrel had fallen upon him, causing a Pott's fracture by forced fibular flexion of the ankle. The internal malleolus was broken off squarely at its base and rotated 90° on its antero-posterior axis, so that its fractured surface faced inward. The displacement was corrected by operation six hours after the accident. There had been an uneventful convalescence, and at this date the form and function were good.

Atresia of the Rectum.—Two patients were shown by Dr. F. Kammerer. The first was a child, now seventeen months old, who had been seen for the first time when four days old. The examining finger could then be introduced for an inch into the anus, and there a very distinct bulging of the upper occluded end of the rectum had been made out. There was a good deal of abdominal distention, and the general condition of the child did not seem to warrant a longer operation at the time. An opening had, therefore, been made with a trocar into the occluding membrane, and a large quantity of meconium passed. Of course this measure had only been regarded as palliative, and a week later an incision was carried from the coccyx around the anus into the perinæum. Through this incision the lower pouch of the rectum was excised as far as the original occlusion, the opening in the latter having, during the preceding week, become much contracted. A great deal of difficulty had been experienced in loosening and drawing down the rectum after excision, but this was finally accomplished without opening the peritoneal cavity. The mucous membrane was separated for some distance from the subjacent coats of the intestinal wall, a mistake which had been noticed in time to prevent any damage. This error, the speaker thought, was easily made if the dissection was not carried on carefully. There was some tension after uniting the walls of the rectum to the margin of the anus, and, although primary union occurred between the mucous membrane and the skin, there now existed a distinct annular stricture, just admitting one finger, about a quarter of an inch above the line of union. Rectal enemata were necessary now and then.

The second case had been very similar, the atresia being an inch and a half above the anus. This child had been operated upon through the same incision as above described thirty hours after birth. It was now six weeks old.

In this case the pouch had been excised and the rectum brought down immediately. The rectum was readily separated from the surrounding tissues. As there was no bulging, the finding of the occluded end had not been easy. The hæmorrhage in this operation had been severe, but the child had borne it remarkably well. It now had good control of the sphincter, but there was a slight stricture in this case, also, just at the line of union, which barely admitted the little finger. The speaker thought both these cases would yield to bougies.

Dr. C. K. Briddon thought the trocar should never be used if it could be avoided, as it made the after-operation much more difficult. Usually there was no trouble about bringing down the rectum as a whole. In the two cases he had had no stricture had resulted. In one case where an operation had been refused he thought he had felt the occluding membrane with the finger, but the autopsy had showed it to be in the ileum.

Dr. F. Lange said the pouch in his last case was an inch and a half long. He had made the posterior incision, had extirpated the coccyx, and had united the two portions of the rectum. Healing had taken place by first intention. There had been a slight stricture which had yielded readily to dilatation with bougies.

Simultaneous Ligation of the Carotid and Subclavian Arteries for Aneurysm at the Root of the Neck.—Dr. F. H. Markoe presented the case of J. C., aged thirty-two, an Englishwoman and the mother of seven children, who had been treated during the summer of 1891 at the Manhattan Eye and Ear Hospital by Dr. James E. Nichols for excessive otalgia. This was controlled well at first by aconitine and phenacetine, but they became ineffectual as the aneurysm developed, and as soon as its presence was suspected she was sent to St. Luke's Hospital, and admitted to the medical wards on August 31, 1891, where the following history was obtained:

Her family history was negative, and her general health had always been good until two years before, when she gave up opium-smoking, a habit which she had practiced for eleven years. Soon afterward she suffered from nasal catarrh, deafness in the right ear, and irregular neuralgias of the right side of the head. She acknowledged a former life of prostitution, and gave an indefinite venereal history of suppurating buboes nine years previous and marked alopecia, but did not recall any sore throat or eruptions. Since giving up opium she had had a moderate daily alcoholic habit with occasional excesses. A few weeks ago she became hoarse and began to cough, and her neuralgia increased greatly, being most intense in the neck just below the ear, and in the chest under the scapula on the right side only.

On admission, she was fairly nourished but intensely anæmic, and her expression was careworn and anxious. She complained of inconstant flatulence and occasional palpitation, with shortness of breath. Her voice was hoarse, her respiration was slightly labored, and she suffered severely from a paroxysmal stridulous cough, with quite free frothy expectoration. The paroxysms were most severe at night, and accompanied by a distressing choking sensation. At the right sterno-clavicular articulation a slight fullness, with apparently some bulging forward of the upper end the of sternum, was observed. Over this, marked expansile pulsation could be felt. "Tracheal tugging" was very marked. Physical examination revealed a soft blowing systolic murmur over the apex, transmitted a short distance to the left, and heard also to the left of the sternum as far as the third rib, with maximum intensity between the nipple and the ensiform cartilage. There was a marked accentuation of the second sound. A harsh blowing systolic murmur in the first space to the right of the sternum for about an inch, was heard also above the clavicle and transmitted up carotid. The lungs were normal, except on the right side, where, anteriorly and above, there was comparative dullness with harsh inspiration and occasional respiratory stridor, and posteriorly comparatively high-pitched resonance in the supraspinous fossa, with somewhat prolonged expiration. The right radial pulse seemed to have higher tension and more force than the left. There was no obliteration of the pulse in the abdominal aorta, no pupillary disturbances, no swelling of the arm and hand, no clubbing of the fingers or incurvation of the nails, no unilateral sweating or congestion of the face, and no dysphagia. The urine was acid, of low specific gravity, and contained a trace of albumin, but no casts were found. She was placed in bed, restricted in diet, and given increasing doses of iodide of potassium. At the end of two weeks the symptoms were increased, and in addition she had severe darting pain in the right side of the head, in the neck, and in the chest, and some vertigo. She was then transferred to the surgical wards.

On the 17th of September the speaker tied the common carotid at the seat of election and the subclavian in its third portion, using a medium-sized catgut ligature for each vessel, and closing the wounds without drainage. Although she took ether badly, being much cyanosed and choked with mucus, she recovered well from the anæsthesia and no untoward symptoms appeared. For a day or two the amount of albumin in the urine was increased and a few casts were found; it, however, soon became normal. The complete absence of pulse in the corresponding temporal and radial vessels proved the efficiency of the ligatures. On the fifth day a faint radial pulse was detected, and on the following day the temporal. During the ensuing week the pulse was sometimes perceptible and sometimes absent in both vessels. On the twelfth day the dressing was removed and both wounds were found completely healed. At the end of a month she returned home, being cautioned as to exertion and diet and directed to continue the use of the iodides and to report at short intervals. She was neither seen nor heard from again until the 9th of April, 1892. When she left the hospital her symptoms had entirely disappeared, except a very slight hoarseness, and, although the pulsating swelling was still perceptible, it was markedly diminished in size. She said that upon her return home she felt so well that she soon gave up taking the medicine and went about her work as usual, but that one day while lifting a pan of water she felt as if something had given way in her neck, and thought that from that time the swelling had slowly increased. Examination proved an increase in the swelling, which had pushed the sternal end of the clavicle upward and forward, and projected somewhat in the episternal notch. Upon relaxing the sterno-mastoid muscle and pressing downward above the clavicle, the upper portion of the tumor could be grasped between the thumb and forefinger. She complained only of cardiac palpitation, and some shortness of breath, and was still slightly hoarse. The speaker sent her into his wards at Bellevue, where she was put to bed, and again started on the use of the iodides. No improvement occurred, and the visible tumor was very slowly increasing in size.

[Note.—On May 17, 1892, she was allowed to return home. The tumor was then of the size of a robin's egg and appeared to have very thin walls. It caused no inconvenience, except that there was beginning dysphagia. She suffered no pain and felt very well, but there was no improvement in the voice.]

Dr. Bryant had had a case of the kind last winter, which was supposed to be an aneurysm of the innominate artery. He had called it an aneurysm at the root of the neck. The tumor extended two inches and a half above the right clavicle. He had first tied the right common carotid, when the stridulous cough, embarrassed respiration, etc., had disappeared and the tumor had begun to diminish in size. Two weeks later, while the tumor was still growing smaller, the speaker had tied the subclavian of the same side. The tumor had diminished to one inch above the clavicle, when the patient had died of cerebral softening from thrombosis of the right cerebral artery. The autopsy revealed an aneurysm of the arch of the aorta. There had been no fibrinous deposit in the sac. Considering what the speaker had done in this case, he had thought it advisable now to try Macewen's operation. Although the results of that operation in this country had not been successful, he still hoped much good might come from it. He had done the operation in one case for an aneurysm of the common iliac artery. The pulsation and bruit had ceased shortly, but the tumor had increased for two weeks, when it became stationary in size, and had remained stationary ever since. The patient was still living and the pulsation and bruit had not returned. He was not prepared to say that the needling was the cause of the change in the growth or simply a coincidence. He intended to give the operation further trial.

Relapsing Appendicitis simulating a Neoplasm; Operation; Cure.—The President presented the case of a man, twenty-one years old, of German parentage, a cutter by trade. The patient had been admitted on December 31, 1891, to Mount Sinai Hospital. The family history had been negative. The patient had had gonorrhœa two years and a half before, and had had three attacks of appendicitis previous to the present one, the first having occurred fourteen months before. It had lasted eighteen days, with fever and no movement of the bowels. The second attack had been nine months before and had been very slight, lasting only three days. The third attack had occurred three weeks ago; the patient was then suffering from slight abdominal pains, which had left him in a few days without treatment or much inconvenience. When he entered the hospital he had been complaining of pain in the right iliac region for two days. When he was lying down, very little pain existed. On examination, a movable tumor of considerable size was found in the right iliac region. There had been no chills or rise of temperature, and the bowels had been moving regularly. At the time of the operation (January 5, 1892) the condition of the patient was good. The patient was anæsthetized and a vertical incision, five inches long, was made over the tumor. A rounded mass was exposed which was found to be firmly adherent to the caput coli. There existed some doubt as to the nature of the tumor. The adhesions were tied off with catgut. Up to this stage of the operation the appendix had not been discovered with the fingers. The mass was carefully dissected away from the intestinal wall. To clear up the uncertainty, a free incision was made into this mass, when the appendix was found imbedded in its center. The appendix was converted into the pedicle of this mass, which was then ligated off and the stump cauterized. During the difficult dissection the caput coli was unavoidably perforated to a small extent. At this stage of operation it was still doubtful whether the mass was a neoplasm or merely the result of an inflammation of the appendix. The intestine was not sutured, only a strip of iodoform gauze having been placed in the wounded intestine. The cavity previously occupied by the tumor was thoroughly packed with iodoform gauze. Silkworm-gut sutures were passed for a secondary approximation of the edges of the wound and a dry dressing was applied.

At midnight after the operation the temperature was 100·4°, and the pulse a little rapid, but good. On January 6th the following conditions were observed: 8 a. m.—pulse, 100; respiration, 20; temperature, 101·4°. At 12 m.—pulse 99; respiration, 20; temperature, 103° (antipyrine ordered). 8 P. M.—pulse, 108; respiration, 20; temperature, 101·6° (ordered whisky, champagne, matzoon, tincture of digitalis). January 7th—temperature, 101°. January 8th—temperature, 100·2°; pulse good. The bowels were moved by an enema.

First dressing: All the packing, except the central piece leading into the gut, was now taken out; there had been no leakage and the cavity looked well. Fresh packing was placed in the opening. On January 11th the temperature varied from 99° to 100°, the patient having been doing very well. The packing was changed and the edges of the wound had partially approximated. On January 13th there was some little pain, with a slight purulent discharge. On January 15th the temperature was normal and the wound was dressed, the patient being then in an improved condition. On February 2d the wound had been dressed from time to time and had emitted but a slight discharge. On February 21st the patient was discharged cured.

The pathologist had reported the tumor as an inflammatory thickening.

Excision of Cancer of the Rectum.—Dr. A. J. McCosh read a paper having this title. (To be published.)

Dr. Robert Abbe stated that he thought the statistics which had been given by Dr. McCosh were very encouraging and that the profession was growing more and more in favor of excision. He thought it an easy matter to bring the rectum down quite a distance by going above the sacral promontory and dividing the mesorectum. He said the rectum, if possible, should be sufficiently loosened and brought down to relieve all tension, but that even if the lower inch of the rectum did slough, the wound would progress kindly and without stricture.

Dr. Rushmore, of Brooklyn, said that the opium treatment of cases too far advanced for operation was not always the only medical treatment. He had treated one case, that of an old man with a very far advanced cancer, having obstinate constipation and tympanites, by the free use of salines. After this treatment the constipation and tympanites had disappeared and the patient had lived in comparative ease for several weeks. The speaker had used the same treatment in several other cases with the same results.

Dr. Lange thought that the two principal points in these cases were to prevent loss of blood and to prevent sepsis. He thought that the knee-chest posture would often aid greatly in controlling hæmorrhage. Pressure forceps he thought better than ligature deep in, as they could be removed in a day or two. To prevent sepsis it was his practice to delay opening the gut as long as possible, and he had frequently ligated it to prevent the escape of the contents until the wound had closed. Where there was a doubt as to the wound having been infected by the contents of the gut; the peritoneal cavity, if it had been opened, should not be closed with sutures, but the wound should be packed with gauze. Otherwise it could be closed with sutures. He agreed with Dr. Abbe that there should be no tension on the rectum at the close of the operation. He had seen several cases where the mesocolon had so shrunk that it had been very difficult to bring the rectum down very far. In one case (in an old man) he had exsected twenty-two inches of the lower end of the gut. It was now four years since the operation and the patient was in good health. He thought that as the technique was improved exsection of the rectum for cancer would be a common operation.

Dr. Meyer had had four cases—three of resection and one of extirpation. One of the resections had been done for syphilitic stricture, the others for cancer. If possible, he always had the bowels thoroughly cleansed before operating, and then kept them constipated with opium as long as possible after the operation. The preparation sometimes lasted from eight to ten days. It was a very important factor in success after resection. Like Dr. Lange, he had not opened the gut until the last thing. When the peritoneal cavity had been opened and the large intestine drawn down he had sutured the peritonæum to the intestine and had packed two small strips of iodoform gauze in on either side of the gut. He had thought the gauze should only be left in for two days. In June, 1888, in his first case, death had occurred from iodoform poisoning, perhaps by leaving in the gauze too long. When resection had been performed he had reduced the lumen of the enlarged upper portion (above the stricture) by a longitudinal suture, which made a ridge on the inner surface, before uniting the two ends. The speaker agreed that no tension should be put on the line of suture. If there was any, a posterior fistula would always form.

Dr. Kammerer agreed with Dr. Meyer in his remarks concerning the thorough preparation of the patient before operation. With a cancer high in the rectum and a retention of fæces above, much preparation by enemata was imperative before the operation could be undertaken, and much care should be exercised in these preparatory manipulations, considering that several deaths from peritonitis were on record after mere examination under ether. He rather agreed with Dr. Lange that it was occasionally a matter of some difficulty to bring down the rectum sufficiently to prevent all tension. When the mesorectum was in a normal condition, however, it could be readily separated from the posterior wall of the rectum without cutting-instruments, and, when the peritoneal cavity had been incised anteriorly, the only parts still holding the bowel in place were the folds of peritonæum on each side of the mesorectum. When these were cut, the rectum followed easily on traction. The speaker thought it a difficult task to obtain primary union of the divided gut after resection; in his experience, a fæcal fistula almost always resulted.

Book Notices.

Miners' Nystagmus and its Relation to Position at Work and the Manner of Illumination. By Simeon Snell, F. R. C. S. Ed., etc. Bristol: John Wright & Co., 1892. Pp. x–143.

This work is the result of the personal observations and investigations of the author among the workmen in the English coal mines. He combats strongly the popular impression that the nystagmus so frequently met with in these coal mines is due to the imperfect light furnished by the safety lamps, and ascribes the trouble to fatigue of the superior rectus, inferior oblique, and internal and external recti muscles induced as a consequence of the miner's work in the pit requiring an upward and more or less oblique gaze. The subject appears to be dealt with thoroughly and fairly, and the author has made a very interesting little book.

A Text-book of the Practice of Medicine, for the Use of Students and Practitioners. By R. C. M. Page, M. D., author of a Chart of Physical Signs of Diseases of the Chest, etc. New York: William Wood & Co., 1892.

The author states that his work is intended as a manual for every-day use. He has avoided argument upon disputed points, has omitted almost altogether the relations of his subject to pathological anatomy, and has devoted his attention mainly to clinical phenomena and treatment. This, of course, constitutes the practical side of medicine, and must ever commend itself to the majority of the profession, with whom there is little time for the discussion of theories. This remark is in no sense to be understood as derogatory to theoretical medicine, but merely as a statement of fact which will be apparent upon a moment's reflection. It is as a clinical teacher, therefore, that the author appears in this book, with no attempt at unnecessary detail, but with his customary clear and felicitous expression of views which are sufficiently settled to be authoritative. No one would ever accuse Dr. Page of being artificial, and it is his characteristic individuality which is the charm of his work. The book marks no era in the history of clinical medicine, but it deserves and will obtain the respect of a large circle of readers from its clearness, its candor, and its truthfulness.

BOOKS, ETC., RECEIVED.

Temperament, Disease, and Health. By French Ensor Chadwick, Commander, U. S. N. New York and London: G. P. Putnam's Sons, 1892. Pp. vi to 85.

Human Origins. By S. Laing. With Illustrations. London: Chapman & Hall, 1892. Pp. xi to 422.

Reports on the Progress of Medicine.

HYGIENE, PUBLIC HEALTH, ETC.

By S. T. ARMSTRONG, M. D., Ph. D.,
SECRETARY OF THE SECTION IN PUBLIC HEALTH, ETC., OF THE NEW YORK ACADEMY OF MEDICINE.

The Regulation of the Practice of Medicine.—Dr. Perry H. Millard publishes (*Jour. of the Am. Med. Assoc.*, July 30, 1892) an excellent paper read before the American Academy of Medicine at its last meeting. He considers that the regulation of medical practice and medical education is constitutional, and that the demands therefor are imperative; that a distinct line of demarkation should exist between the so-called licensing power and the regulation of medical education; that the licensing power should include in every State the following essentials: (*a*) Evidence of the candidate's fitness to practice medicine, established by his undergoing an examination in all the important branches of medicine. (*b*) A series of questions conflicting in the least with various schools of practice is unnecessary. (*c*) Power to revoke or refuse license for unprofessional or dishonorable conduct. (*d*) Such power only to be resorted to in palpably flagrant cases. (*e*) Mixed boards, because public interest is best subserved by them. (*f*) The vested power should be executed by the State board of health. (*g*) The appointing power should be vested in the Governor. (*h*) Appointees should be men of recognized ability and standing in the various communities. He has compiled two interesting tables from the records of different boards of State examiners, showing the results obtained by graduates of colleges requiring three and two courses of lectures respectively. The tables explain themselves and are well worth studying, and it may be stated that these colleges were selected because they had the largest number of students. *Ex uno disce omnes.*

The following table indicates the result of the examination of one hundred and eighty-three students, graduates of colleges requiring three courses of instruction before receiving the degree of M. D.:

STATE.	UNIV. PENN.		UNIV. MICH.		UNIV. MINN.		HARVARD.		CHICAGO MED. COLL.		COL. PHYS. AND SURG., NEW YORK.	
	Passed.	Rejected.	Passed.	Rejected.	Passed.	Rejected.	Passed.	Rejected.	Passed.	Rejected.	Passed.	Rejected.
Alabama	10	0	2	0	..	..	3	0	..	..	6	0
Minnesota	18	0	37	0	53	3	7	0	15	0	8	0
North Carolina	3	0	1	0	..	..	..	..	..	..	4	0
North Dakota	..	..	..	..	..	..	..	..	..	..	..	..
Virginia	4	0	2	0	..	..	..	..	..	..	6	1
Totals	35	0	42	0	53	3	10	0	15	0	24	1

Total number of different persons examined........ 183
" " " " passed.......... 179
" " " " rejected......... 4

Total percentage of persons passed, 97·2 per cent.

The following table indicates the result of the examination of four hundred and thirty-five students, graduates of colleges formerly issuing degrees upon attendance of two courses of lectures:

STATE.	UNIV. N. YORK.		JEFFERSON.		RUSH.		BELLEVUE.		PHYS. AND SURG., BALTIMORE.		UNIV. LOUISVILLE.	
	Passed.	Rejected.	Passed.	Rejected.	Passed.	Rejected.	Passed.	Rejected.	Passed.	Rejected.	Passed.	Rejected.
Alabama	13	0	15	3	3	1	12	0	12	1	14	4
Minnesota	2	1	5	2	12	9	4	3	..	..	..	..
North Carolina	34	..	39	2	..	..	17	3	69	25	3	4
North Dakota	..	1	1	0	..	..	..	..	..	..	..	..
Virginia	14	6	20	8	0	..	11	0	42	15	2	3
Totals	63	8	80	15	15	10	44	6	123	41	19	11

Total number of different persons examined........ 435
" " " " passed....... .. 343
" " " " rejected......... 92

Percentage passed, 78·8.

The Work and Pay of Health Officers.—Dr. H. B. Baker discusses (*Jour. of the Am. Med. Assoc.*, 1892, xviii, p. 631) this subject from the standpoint of his long experience in the State Board of Health of Michigan. The laws of that State require, wherever it is practicable, that a health officer shall be a physician; and there are fifteen hundred health officers chosen every year. With few exceptions, the remuneration of these officials is very small and inadequate. So much work is now required of these officers under the law that gratuitous service can not be expected. A town meeting is advised, at which the local board presents an estimate of the amount that should be collected, basing the request upon the decrease of mortality from infectious diseases that follows well-regulated sanitary work, since it is better to pay a health officer than to permit the death of members of the community who, by living, will increase the prosperity of the community. While this argument is undoubtedly true, it is not stated how much should be paid the health officer. It would seem feasible to fix his remuneration by a tax on each male resident over twenty-one years of age in a town or village of a certain size. In more populous localities the salary of the official could be taken from the general tax collected. In the former instance the amount of the tax could include the expenses incidental to the office, except in a case of an epidemic.

The Action of Tobacco-smoke on Pathogenic Micro-organisms.—In the *Revue d'hygiène* for January 20, 1892, there is a *résumé* of a paper by Dr. V. Tassarini (*Annal. del. Istit. d'Igien. sper. del. R. Univ. di Roma*, vol. i, 1891, p. 155) on the action of tobacco-smoke on micro-organisms, in which the author recalls that in the seventeenth and eighteenth centuries a certain number of physicians recommended the use of tobacco as a preventive of the plague and other epidemic diseases. Ruef, of Strassburg, called attention in 1842 to the immunity of persons employed in the manufacture of tobacco during most epidemics. Pécholier, in 1883, called attention to its antizymotic properties, and Cock, of Texas, advised its use to prevent phthisis. Miller, in 1884, experimented with tobacco smoked in a nargileh, in which the liquid contained cultures of the micro-organisms of dental caries, and the fluid was sterilized. Visalli, of Naples, in 1888, made the smoke of from one to four cigars, according to their proportion of nicotine, pass over a gelatin plate inoculated with the cholera bacillus and sterilized the cultivations.

In the author's paper the apparatus he employed is described, and twenty-one tables indicate the results obtained with each species of microbe, specifying the quality and quantity of tobacco consumed (from one to six grammes), and the duration of the smoking (from ten to thirty minutes). The cholera bacillus and Friedländer's bacillus were always completely arrested in their development by the smoke of various kinds of tobacco; the charbon bacillus was somewhat more resistant; Eberth's bacillus was modified. Tassarini concluded that cigar-smoking possessed a veritable antibacterial power in general, and especially against cholera asiatica, so that in epidemics of that disease, as in those of typhoid fever, smoking would be of a certain advantage. It also merited serious consideration in the hygiene of the mouth as a prophylactic measure against parasitic affections of the buccal cavity. These experiments are negatived, however, by those of Kuhn and Jalan-de-la Croix (Vallin, *Traité des désinfectants*, p. 104), who cultivated microbes in an infusion of tobacco.

The Disinfecting Power of Lye.—According to the *Revue d'hygiène* for January 20, 1892, Dr. A. Montefusco and Dr. O. Caro have published (*Rivist. internaz. d'igiene*, 1891, fasc. 10, 11) a paper on a practical, domestic, and economical disinfection by ordinary lye. After an immersion of twelve hours in a solution of boiling lye, cholera and typhoid bacilli and charbon spores were invariably destroyed. If the solution was kept at a temperature of 20° C., sterilization resulted in six hours; at 50° C., one hour's immersion produced sterilization; the spores of charbon were not destroyed in one, two, or less than six hours at a temperature of 100° C., whereas in that time the same result was obtained at a temperature of 25° C. The alkalinity of a litre of this solution of lye was exactly neutralized by 315 cubic centimetres of a normal solution of pure oxalic acid. Frequently in Naples and at many Italian hotels linen is bleached by immersion in a solution of lye that requires 500 cubic centimetres of a normal oxalic-acid solution to neutralize it. The destruction of bacilli is equally assured by six hours' immersion in this liquid prepared for domestic use. Gerloczy, of Buda-Pesth, published a paper some years ago recommending lye as a microbe destroyer for fæcal matters; and recently Schimmelbusch and Behring have confirmed his results in experiments made with various micro-organisms.

The Congress of Tuberculosis in 1893.—According to the *Revue générale de clinique et de thérapeutique* for July 13, 1892, the following questions are to be discussed at the Congress of Tuberculosis in July, 1893: 1. The respective rôles of contagion and heredity in the propagation of tuberculosis. 2. Infectious diseases as agents provocative of tuberculosis; the rôle that is played by certain of them in the localization of tuberculosis, such, for instance, that of gonorrhœa in the development of tuberculosis of the testicle, and that of grippe in the development or aggravation of pulmonary tuberculosis. 3. Remissions in tuberculosis; the duration of these remissions; the methods of recognizing them and of preventing their cessation; the causes of recurrence. 4. The various methods of diagnosticating bovine tuberculosis, especially in determining if inoculation is a sure and certain method of establishing the diagnosis of tuberculosis in cattle. 5. The dangers that may follow the inhumation of tuberculous corpses; the opportuneness of substituting cremation for inhumation; the necessity of destroying the tubercle bacilli in corpses. 6. New methods of prophylactic and curative treatment of tuberculosis, based on its ætiology. 7. The utility of a general inspection of meat. A prize of $600 (3,000 *f.*) will be given for the best work on the question of "The methods of diagnosticating latent tuberculosis before its appearance or after its cure."

Earth-worms and Tuberculosis.—Dr. Lortet and Dr. Despeignes have published (*Lyon médical*, No. 29, 1892) a report of their investigations regarding the possibility of earth-worms carrying to the surface tubercle bacilli from inhumated corpses, as Pasteur has shown they do with charbon spores. Tubercle bacilli in sputa and sections of tuberculous organs were buried in the soil of large flower-pots in which several worms were placed. At the end of some months the worms were removed and inoculated in guinea-pigs, which rapidly succumbed to acute tuberculosis. The organs of the worms contained tubercle bacilli, although no lesion was apparently produced by their presence. These results seem to show an additional desirability of cremation.

The Behavior of the Typhoid Bacillus in the Soil.—Dr. J. Karlinski has published (*Arch. f. Hyg.*, 1892, Bd. xiii, Hft. 3, p. 302) the results of experiments made during the past two years with pure cultures of the typhoid bacillus, typhoid dejections, and pieces of organs from typhoid patients buried in earth that was humid or approached natural conditions. He ascertained that the longest time the bacillus remained alive in soil was three months. The vitality of typhoid bacilli introduced into the earth in typhoid stools was much shorter than that of pure cultures of the bacillus placed in the same soil in the same state of dilution; this result was apparently due to the greater vitality of the ordinary bacteria of fæces. In the deeper layers of the soil the typhoid bacillus may withstand the alternations of temperature, of humidity, and of the ordinary earth microbes. But at the surface of the soil they rapidly succumb to humidity and the action of sunlight. Irregular or abundant saturation of the soil with water notably affected the existence of the typhoid bacilli. In soil penetrated by the roots of plants the vitality of the bacillus was shortened. He also ascertained that the bacillus could be found after the end of three months in the organs of persons dead of typhoid fever when the circumstances of inhumation were such that putrefaction was retarded in consequence of the prevention of the access of the specific organisms of putrefaction.

A Bacteriological Study of Drinking-water.—Dr. Victor C. Vaughan has published (*Am. Jour. of the Med. Sci.*, August, 1892) the results of his work in the bacteriological study of drinking-water since 1888. He describes the methods by which he obtains his samples, makes cultivations, and inoculates animals. He concludes that many of the germs found in drinking-water will not grow at the temperature of the human body, and are therefore incapable of producing disease. Of the germs which grow at 38° C., or at higher temperatures, some are fatal to animals (toxicogenic) when injected subcutaneously, while others are not (non-toxicogenic). The non-toxicogenic germs do not multiply when injected under the skin or into the abdomen of animals; but this is not sufficient evidence that they would not multiply in the human body, so water containing them has been regarded as suspicious. Some of the toxicogenic germs produce the same symptoms and post-mortem appearances in animals as Eberth's bacillus; the properties of the former are fully equal to those of the latter, and they not only live but multiply in the animal body; water containing them was always condemned. It was found that more than one germ obtained from drinking-water grew with an invisible growth on potatoes, and that several grew on the media proposed by Parietti, Uffelman, and others, as a means of recognition of Eberth's bacillus.

A Bacteriological Study of Carbonated Waters.—According to the *Journal d'hygiène* for June 30, 1892, p. 310, Alfonso Montefusco, of Naples, has made a number of examinations of St. Galmier water (containing bicarbonates, lime salts, gas, etc.), St. Moritz water (containing carbonate of iron, bicarbonate of calcium, gas, etc.), Apollinaris water (alkaline substances and gas), Selters water (bicarbonates, sodium, and gas), and artificial Selters water. In St. Galmier water there were sixty colonies of micro-organisms to the cubic centimetre, only five or six of which liquefied gelatin; the micro-organisms were the *Bacillus liquefaciens*, *Micrococcus candicans*, and *Bacillus fluorescens*. St. Moritz water was absolutely amicrobic, and remained so in a bottle closed by sterilized cotton. Apollinaris water was also amicrobic. Selters water contained thirty micro-organisms to the cubic centimetre; they were the *Bacillus fluorescens*, *Bacillus garagero* (Eisenberg), and numerous aspergilli. Artificial Selters water, twenty-six hours after manufacture, contained ten micro-organisms (*Micrococcus candicans*) to the cubic centimetre, as well as *penicilli* and *aspergilli*; but in twenty days this water only contained four or five to the cubic centimetre, and eventually became amicrobic. He considered that the small number or absence of micro-organisms in natural or artificial carbonated waters was related to the composition of those waters, and especially to the amount of carbon dioxide which they contained. The noxious action of the latter on saprophytic micro-organisms has been confirmed by Meade Bolton, Fazio, Scala, and Alessi, though it has no effect upon the development of the bacilli of charbon, typhoid fever, or cholera.

An Experimental Study of the Self-depuration of Running Water.—In the *Journal d'hygiène* for May 10, 1892, p. 237, there is a *résumé* of a paper by Dr. Alessandro Serafini, published in the *Annals of the Experimental Hygienic Institute of Rome*, in which he states that tradition, daily observation, and scientific research accord in showing that, in the majority of cases, the water of running streams, spontaneously and in a short time, is purified of all abnormal and heterogeneous substances which it has received in traversing a great center of population. The works of the Royal Commission, the classic report of A. Durand-Claye on the Seine, the chemical and bacteriological analyses of Schelhoss of the Iser, Fleck of the Elbe, Moser of the Main, Franck of the Spree, and Celli and Scala of the Tiber, demonstrate that the quantity of organic substances, ammonia, and bacteria diminishes at a slight distance from the point where they enter the stream, while there is an augmentation of nitrous and nitric acid, indicating that the work of oxidation is progressing. Aeration, in consequence of a continual renewal of air, in no way prevents the development of micro-organisms; and, while it is indubitable that the presence of air is indispensable for the oxidation of organic substances elaborated by the bacteria, that aeration does not alone suffice to accelerate the oxidation. The experiments showed that there was no constant and appreciable difference between water in which there was continuous aeration from the rapidity of the current and water in which aeration was effected under barometric pressure or the influence of temperature.

As was formerly established by the English commission, the transformation of organic substances in water occurs so slowly that it is very difficult to demonstrate it as well in the entire course of the stream as in the limited space that is the object of experiment and analysis. While it is not to be doubted that nitrification is due to bacteria in the water, it is only after a long time that the first manifestations of nitrification in any water may be recognized. So far as the action of light is concerned, not only does it not contribute to the transformation of organic substances, but it retards and prevents it by killing the bacteria more or less quickly. The action of low temperatures is incontestable in killing, or inhibiting the development of, bacteria; though in large masses of water, if favorable for the development of bacteria, lowering of the atmospheric temperature does not seem to produce any noxious action. In experimental researches and in local observations on water having a rapid or slow current, it may be established that there is a gradual and continued sedimentation of bacteria that is favored by the assistance of other substances held in suspension in the water. It seems that the self-depuration of water is not effected by oxidation processes in the mass of water itself. The rapid diminution of bacteria is due to sedimentation, dilution, the mechanical action of substances held in suspension, the motion of the water, the low temperature, a superficial filtration on the bed of the river, and perhaps an inherent action of the water itself. Consequently, sedimentation and dilution produce a rapid diminution of organic substances and ammonia, while there is a rapid but gradual increase of nitrites and nitrates with a diminution of bacteria.

Is drinking Sewage by Milch Cows a Danger to Public Health?—Mr. J. Byrne Power discusses (*Public Health*, February, 1892) this question from the standpoint that many human diseases are communicable to cattle, and that milk infected with the germs of those diseases can reproduce them in either man or beast consuming the milk. As disease germs affect men and the lower animals in a similar way, it seems a matter of the plainest common sense that supplying sewage-contaminated water to cattle is no safer than to supply it to human beings. Gooch (*Brit. Med. Jour.*, 1890, vol. i, p. 474) attributed an outbreak of diphtheritic amygdalitis at Eton College to such contamination. Gibson (*Pharmaceut. Jour. and Trans.*, vol. xix, p. 541) attributed an outbreak of typhoid fever to milk from cows drinking water contaminated by fifty-two grains of decomposing animal and vegetable matter to the gallon. Dr. Hicks (*Lancet*, 1878, vol. ii, p. 830) traced a typhoid-fever epidemic to this source. Dr. Parsons (*Loc. Govt. Bd. Med. Rpt.* for 1889, p. 102) says that in certain conditions cows may contract disease by the ingestion of sewage-contaminated water, and he thought an outbreak of scarlatina at Macclesfield might be attributed to this cause; so also Power (*Loc. Govt. Bd. Med. Rpt.*, 1886, p. 325) thought an outbreak of diphtheria might be attributed to this cause. Klein's experiments showed (*Loc. Govt. Bd. Med. Rpt.*, 1887, p. 207) that milk from a cleansed and unaffected teat of a diseased cow contained the *Streptococcus scarlatinæ*. The theory that the process of secretion of milk suffices to prevent the entrance of germs into that fluid was proved untenable as far back as 1872, when organisms were obtained from the milk that were contained in the drinking-water. The author concluded that milch cattle should be supplied with pure drinking-water both in summer and in winter.

Sewage Disposal for a Small Town.—In a report on the Evesham sewage works, in *The Sanitary Record* for July 1, 1892, it is stated that the system there employed is that of lime precipitation followed by upward filtration through land. The system is unsatisfactory, and the lime treatment created such a nuisance that ferozone, a deodorant and precipitant, had to be substituted for it. The dry-weather flow of sewage being 120,000 gallons daily, it is proposed to provide three tanks of 50,000 gallons each, on the intermittent system, and four polarite filters, of fifty square yards each. The sludge is raised from the well and pressed into cakes by compressed air, and it is calculated that, when dried and ground, it will be worth fifty shillings a ton as a fertilizer.

The Drainage of Cemeteries.—M. P. Brouardel and M. O. du Mesnil publish (*Ann. d'hyg. pub., etc.*, July, 1892, p. 27) a report in which they rapidly survey the laws governing inhumation in France, and the necessity of using a grave again in a certain period of years. In order to secure the most rapid decomposition of the body, aeration and drainage of the soil are considered necessary. By a system of subsoil drainage the soil is dried, permitting the penetration of considerable air, and bodies exhumed a year after burial had no odor, the soft parts had more or less completely disappeared, and the remains resembled those buried for five years in ordinary ground.

Venereal Disease among Minor Parisian Prostitutes.—Dr. Commenge has made an investigation (*Jour. d'hyg.*, April 28, 1892, p. 202) of the incorrigible minor girls who form a notable portion of the contingent of clandestine prostitutes in Paris, contributing largely to the propagation of syphilis. His researches included the decade from 1878 to 1887. The ages of the girls were from thirteen to twenty-one, and the venereal diseases were classified as primary or secondary syphilis, or contagious venereal diseases.

YEAR.	Number of girls.	Syphilis: primary, secondary.	Contagious venereal diseases.	Number of manifestations.
1878	438	189	269	414
1879	394	246	295	429
1880	614	428	240	720
1881	476	295	176	512
1882	591	386	473	640
1883	479	301	176	512
1884	438	265	350	468
1885	487	227	390	526
1886	416	172	237	441
1887	389	142	246	414
Total	4,722	2,651		

More than half of these girls, some of whom seem no more than children, are syphilitics. The Paris Academy of Medicine, to which this question was submitted in 1888, adopted a resolution stating that "the Academy demands of the legislative powers a sanitary law regulating and confirming administrative intervention, particularly as regards minors, in order to arrest this evil wherever it may appear."

Infectious Fevers in London.—In a leading article in the *British Medical Journal* for July 23, 1892, there is a review of the Report of the Metropolitan Asylums Board on the working of its infectious hospitals, imbecile asylums, etc. There were 5,262 persons with scarlet fever admitted during the year; this amounted to over 67 per cent. of all (7,809) the cases treated. From 1871 to 1891, 42,111 cases of scarlet fever had been treated in the hospitals, with a mortality of 9·58 per cent.; but under two years of age the mortality was three times as great as the average in general, and for the first five years of life it was double the general average; from fifteen to twenty years the mortality averages only 3·33 per cent.; at all ages above one year and under twenty-five the mortality among males has been greater than among females; albuminuria was present in 11 per cent. of the cases.

During 1891, 1,312 persons with diphtheria were admitted; and since 1888, when subjects of that disease were first admitted, 3,075 cases have been treated, with a mortality of 33·63 per cent. But in children under one year of age the mortality was 59·65 per cent.; in the second year it was 68·79 per cent., and slowly declined in each year of life thereafter, being 45·21 per cent. in the fifth year. In the quinquennium five to ten it was 32·49 per cent., rapidly declining thereafter until between twenty-five and thirty it was only 1·05 per cent. There were more female than male patients with this disease, though the death-rate in the latter was 35·15 against 32·36 per cent. in the former. Albuminuria was present in 17·1 per cent., paralysis in 11 per cent. (most frequent in the soft palate, next in the accommodation, and lastly as paraplegia).

During 1891, 755 persons with enteric (typhoid) fever were admitted, while since 1871, 7,715 cases had been treated, with a mortality of 17·34. The death-rate was lowest in the quinquennium five to ten, being only 8·65 per cent.; under five, and from ten to fifteen, the mortality was the same—about 13 per cent. But after the latter age it rose steadily to the maximum 26·72 per cent. in the quinquennium thirty-five to forty.

During the year 450 patients were admitted on erroneous diagnoses, ranging from a confusion of general tuberculosis with enteric fever to a diagnosis of scarlet fever in a case of epiphysitis of the humerus. The percentage of errors in diagnosis has increased from 2·4 to 6·2 in the last five years.

Hippophagy in France.—According to the *Revue d'hygiène* for January 20, 1892, Dr. Ch. Morot has published a report (*Bull. du comice agric. du dépt. de l'Aube*, No. 195, 1891) on the progress of hippophagy in France since 1866, when the first butcher-shop for horse meat was opened in Paris. In 1887, 40,000 solipeds (36,000 horses and 4,000 asses and mules) were consumed in the fifty cities of France, the department of the Seine and Paris consuming 16,446 (only 2,758 were consumed in 1869); Toulouse, 3,805; Lyons, 3,291; Marseilles, 2,188; Tours, 1,329; Rheims, 1,027; Troyes, 917; Dijon, 165; etc. As a rule, the consumption has increased from year to year; for instance, at Toulouse from 1878 to 1887, 26,887 solipeds were consumed, an average of 2,688 a year. The butchers complained that the consumption of horse flesh was ruining commerce, industry, and agriculture. In Paris horse meat is sold at about half the price of an equivalent quality of beef; the fillet is fifty cents for two pounds (kilogramme), while meat clear of bone, fat, and gristle costs but thirty cents for two pounds. Hippophagy is on the increase in the cities of Holland, Belgium, and Germany. The slaughtering houses should be carefully supervised to see that diseased animals are not employed for food.

The Hygiene of Electric Lighting.—Dr. Gariel publishes (*Revue d'hyg.*, Feburary 20, 1892, p. 101) a paper on the relation of electric light to hygiene. He concludes that in the usual conditions in which it is employed no injury to the eyes results from its use. It is superior to all other methods of illumination known at present, because it produces very slight changes in the composition of the air and evolves a feeble heat; it should therefore be used as the means of lighting all halls destined to contain a number of persons. The danger of fire or of accidents from contact with the current conductors may be avoided by a proper arrangement of the latter. No more danger results from the establishment of a central electric station than from any other industry in which steam is employed as a motor.

New Inventions, etc.

A NEW PORTABLE DRY-CELL FARADAIC BATTERY OF SMALL SIZE AND GREAT POWER.

By Frederick Peterson, M. D.

I have recently had made for me by H. E. Stammers, of 1,424 Broadway, a faradaic battery which has unusual advantages. It is so small as to be carried in one's hand-bag among other instruments with the greatest ease. It is smaller than the apparatus of Gaiffe, which is generally known as a "pocket" battery. It is more powerful than the Gaiffe, for it has four cells, while the latter has but two; and it is cleaner, since no fluid has to be added before it is used. The cells are those made by the Chloride of Silver Dry-Cell Company, of Baltimore, and will last one hundred hours. The battery then has the valuable qualities of those invented by Barrett—viz., great durability, dryness, cleanliness, and diminutive size. The illustration (Fig. 1) gives its general form and appearance. The ends are square, 2½ by 2_2 inches, and the length about 5½ inches. The illustration, therefore, may be considered as in the neighborhood of one quarter the size of the battery itself.

The iron core is very thin Russia sheet iron, shellacked and rolled tight to make a core 3½ inches long and $\frac{13}{32}$ inch in diameter.

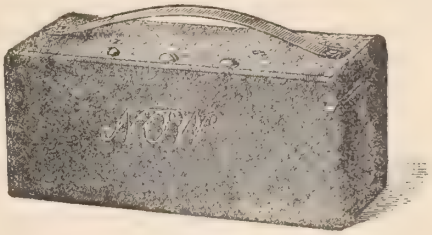

Fig. 1.

The primary coil consists of six layers of No. 25 copper wire.

The secondary coil consists of fourteen layers of No. 36 copper wire.

The four chloride-of-silver cells are connected, two in multiple arc and two in series.

The vibrator makes a sliding connection, changing the point of coaptation, thereby cleaning itself.

The case is neatly covered with Russia leather.

It is particularly serviceable to any one who makes use of electricity to any great extent outside of his office, either for diagnosis or for treatment. The muscular contractions produced are powerful. Rheophores and electrodes are carried in the hand-bag and not in the battery itself. For neurological diagnosis, the best interrupting handles are undoubtedly those made by J. C. Vetter & Co., of 214 East Forty-seventh Street, because of their practical design and the satisfactory flexibility of their springs. They have just made for me an interrupting handle (Fig. 2) of very small size—2½ inches in length—which is exceedingly convenient for the pocket or hand-bag.

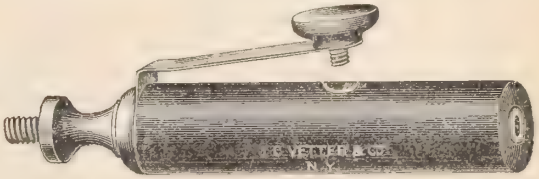

Fig. 2.

Miscellany.

On Some Diseases of Plants compared with those of Man.—This was the title of an address delivered at the opening of the Section of Medicine at the recent annual meeting of the British Medical Association, by W. H. Ransom, M. D., F. R. S., F. R. C. P., Consulting Physician to the General Hospital, Nottingham.

After a few introductory remarks Dr. Ransom, for advance proofs of whose address we are indebted to the *British Medical Journal*, said:

I shall not touch upon those plant diseases which correspond to general disorders of circulation and nutrition in animals, nor upon those which are essentially destructive of life. Degeneration will be incidentally noticed, because, in one admissible sense of the word, it occurs as an essential part of that morbid process with the consideration of which I propose to occupy your attention.

Inflammation in plants might have been the title of this address, as it will deal almost solely with that process which, as I define it provisionally, may be considered as the reaction of living cells to irritation. All such reactions in plants produce what are, or may be called, galls, using the word widely, but some of them which occur in growing points are known as witch-knots. It may be convenient to add that a gall should be considered as a local hyperplasia, or overgrowth of tissue, which differs from a local hypertrophy in that it diverges in structure and form from the normal tissue or organ with which it is related, and injures, or at least does not benefit, the plant. The causes of such reactions, or, in other words, the irritants, I do not doubt may sometimes be mechanical or physical agents, or inorganic chemical substances, but, as a matter of fact, all those which have been most successfully investigated inhere in living organisms. These organisms are very diverse, so that nearly every order of insects presents us with some examples. Among the *Acari*, the *Phytopti*, or gall-mites, are the best known; some *Anguillulæ* have long been known to produce galls, and some parasitic *Fungi* as well as certain as yet imperfectly classified organisms also cause galls.

From these diverse sources spring causes which produce results that agree and yet vary. Thus, in all instances there follows local hyperplasia, with modification of structure and form; and in each there is such a definite relation of the process to the irritant that the evolution of the gall is mainly directed by it, and the product is therefore specific. In the case of galls due to insects, the insect which lays the egg is usually spoken of as the cause of the gall; but, to speak accurately, it is only constantly associated with that cause, which directly inheres in the developing embryo in ova, or in the young free larva for a part only of their life and development. Some of the parent insects, while depositing their eggs, wound and kill portions of the plant where the egg rests, and the reaction occurs in the nearest living cells, but the wound is not irritant. Some of them do not wound the tissue where the ovum rests, although neighboring parts are wounded. In these cases the wounded tissues heal, and the gall growth takes place where the egg rests and develops. Some organisms, such as fungi, produce no wound when they cause galls. There are no grounds for adhering to the view, once held, that the parent insect deposits a virus with the egg. No galls are known to be due to any single act or impulse of any kind. The character of the reaction varies mainly with the irritant, but also in a much less degree with the tissues irritated. The irritant may inhere in an embryo *in ovo*, or in a free hatched larva, or in both, or perhaps in an adult gall mite or in a mycelium, or in other more imperfectly understood organisms, animal or vegetal, if living; and although I grant the possibility that it is sometimes mechanical or physical, yet I think it more probably always is some organic liquid chemical substance, not very diffusible, produced in small quantities either continuously or at short intervals during a short part of the life and development of the parasite, and having a different composition in each species. In some galls, due to the developing embryos of heterogenetic insects, the egg is laid by a mother which differs from the insect which her own egg develops into. Thus the gall is in one sense the product of the embryo of the insect which escapes from the ripe gall, but in another sense it is the product of the mother which laid the egg. It is much to be regretted, I think, that the specific name of the insect which escapes from the ripe gall is often employed to designate the gall itself.

Before I proceed further with these remarks upon galls in general, it will be well to bring under your notice some selected examples, and to show some specimens, photographs, and drawings.

1. The common oak apple is due to the deposition of ova in a bud by the unisexual form *Biorrhiza aptera* derived from a root gall; and it yields the bisexual form *Teras terminalis*, which lays its eggs in the young roots and produces the root galls.

The bud is punctured early in the winter, and its axis is cut quite across, just below the lowest green leaflets. At this level the divided tissues are already differentiated. The distal part of the axis, with its appendages, dies, but is held *in situ* by the bud scales. The abundant ova fill the saw cut and rest upon the axis, but separated from the living cells by a brown crust composed of dead cells and exuded juices. During the winter the embryos develop somewhat, but no gall growth occurs until the early spring, when, shortly after one can detect in the unhatched embryos active mandibular movements, the gall plasm begins by a proliferation with modification of the cells immediately beneath the brown crust. All the elements of the axis take part in this process, and an embryonic meristem is produced, which, bursting through and pushing aside the brown crust, comes into contact with the just escaping embryo. This it rapidly grows around and imbeds so closely as to push the egg-shell off the embryo and leave it adhering to the young gall, where the overflowing growth meets. Successive ova about to hatch come into contact with the outer surface of this embryonic gall plasm, and excite in it a proliferation of cells like those from which they spring, so that the embryos are all separately imbedded, the empty egg-shells being left at the distal pole of the now composite gall, and retaining there the dead, cut-off axis. I am not sure, but I think the young embryos help with their mandibles to burst their egg-shells and may also tear the brown crust, and thus enable the irritant to reach the cells which react.

Sometimes the insect cuts the axis in the normal way, but lays no eggs, and then no gall grows. Sometimes very few, perhaps but two or three, eggs are laid, and then the gall is proportionate. Sometimes eggs are deposited, but the embryos do not develop, and then no gall growth occurs; or, if the embryos die after a certain stage of development, the gall, which had begun, ceases to develop and soon dies. The first product of reaction—the gall plasm—is, as has been said, an embryonic meristem and quite undifferentiated; it contains no chlorophyl, or next to none, and resembles in some respects a young callus. It has, however, no potentialities, such as belong to true callus. During its evolution it passes through a series of changes in its minute structure which are directed in all their stages by the developing embryos or larvæ, and these result in the production of a complex mechanism which serves to feed, lodge, and protect the parasite without advantage to the host, and is markedly heterologous. Greater vigor of growth of the plant increases the size of the gall, but this does not benefit the plant. When the larvæ are fully developed and become inactive, the gall ceases to grow, and after some changes comparable to those met with in ripening fruit, it dies and the insect escapes. The tree loses a bud and some nutritive material, but the neighboring tissues suffer little injury.

2. The common currant gall of the oak follows the deposit of an egg in a bud early in spring by the unisexual form *Neuroterus lenticularis*, itself hatched from the red spangle, and it yields in June the bisexual form *Spathegaster baccarum*.

Although some living tissues are wounded in laying the egg, this itself rests upon the uninjured upper surface of a young leaflet, of which the tissues are then slightly differentiated. The punctured wound simply heals, and the gall plasm springs only from the unwounded part upon which the developing ovum rests. This reaction begins only after a few weeks, when the embryo is about ready to escape. The epidermal cells multiply and are differently modified in successive generations, so that those which lie next to the embryo become the white food layer, and those which lie next outside it become green succulent parenchyma, and the still more distant cells remain as a slightly modified epidermal layer. All the other elements of the leaf, however, take part in the formation of the gall. During this process the growing gall closely incloses the embryo and pushes up the empty egg-shell to the point where the overflowing gall plasm meets. In the example there is no sudden production from differentiated tissue of an embryonic meristem, which subsequently develops; but rather a gradual change of existing cells with slight modification of their characters and arrangements. The outcome is again a mechanism adapted to suit the parasite. The mature insect escapes from the ripe gall, which then soon decays, but when, as sometimes happens, lodgers occupy the gall, kill its inmate, and produce a secondary gall inside, it lives much longer, and, indeed, as long as the new inmates require its aid.

3. The common red spangle is due to the deposition of an egg by the *Spathegaster baccarum* in a wound between the surfaces of the young oak leaf in June, and it yields the *Neuroterus lenticularis* in the following March. Parenchyma, fibrovascular bundles, and epidermis are all wounded, and a portion of the latter dies at a little distance from the puncture on the lower surface of the lamina. The egg is placed in the wound, and after a few weeks the gall plasm grows at first from the cambiform cells, so as to inclose the embryo and leave the empty egg-shells in the puncture. The gall plasm is at first an embryonic meristem without chlorophyl, which bursts through the dead cells of the lamina in that stage. Differentiation of tissues rapidly follows, and a very complex and remarkable structure is developed, which has an unusually long and quasi-independent life. In this case the irritant has so di-

rected the course of the evolution of the gall as to prepare in advance stores of material for its further growth after its separation from the tree. The plant suffers very little injury. Often two or more species of spangles are met with at the same time on the same leaf, showing in the strongest manner the prepotent influence of the irritant in determining the character of the reaction.

4. The common nut gall demands a brief notice. It is caused by *Cynips kollari*, a parthenogenetic insect, which makes a wound, but leaves its egg upon an unwounded very young bud. The wound heals, and the young gall springs from the unwounded cells upon which the egg rests; soon it incloses the embryo by an embryonic meristem which is free from chlorophyl, and then develops into a complex structure which contains chlorophyl, and is extremely heterologous. Beyerinck says of this gall that it is not comparable with root, stem, or leaf, and would seem to resemble a special organ. The direction and duration of the evolution of this gall depend at first upon the developing embryo, and afterward upon the free larva, as is well shown in the effects of the parasites and lodgers which attack it. It has a short life and does but little damage to the plant. The period of its growth anticipates that of the normal development of the bud.

5. There are some galls which require notice because the gall proper separates itself from hypertrophied plant tissues which surround it. This outer gall, as it has been called, is usually composed largely of fibrovascular tissue; it often persists as a part of the parent tree, and, although deformed, it bears normal buds and shoots. Such are the galls which yield the *Andricus inflator* and *A. curvator*.

6. The artichoke gall illustrates a somewhat different mode of extension of the influence of the irritant beyond the true gall. The bud axis, which at its apex bears the gall, carries at its base a large number of modified scales, and these serve as a protection to the true gall before it is thrown off by a sort of dehiscence. In this case the protecting scales and the basal part of the bud axis are not, as in the previous example, mere hypertrophies, and they soon die and are cast off.

7. The willow galls, caused by several species of *Nematus*, illustrate well the growth of a gall from the wounded surface inside the leaf within which the egg is laid. The gall reaches nearly its full size and perfect structure before the embryo leaves the egg. If the embryo dies, the growth of the gall is at once arrested. The free larvæ are much more voracious than those of *Cynipidæ*, and soon eat more tissue than is excited to fresh growth, so that the whole center of the gall is consumed.*

The gall growth from the first is a slight proliferation of, and a gradual change of, all the leaf tissues retaining their chlorophyl. The product is not so heterologous as in the previous examples, but not the less does its evolution depend upon the developing embryo.

8. Many examples might be given of gall production by a free larva as distinguished from production by an embryo *in ovo*. One of the best is the common globular rose gall, which is often attacked by a lodger, a species of *Synergus*, the larvæ of which kill the gall producer, consume its food stores, and then excite the growth of secondary galls inside, as well as modify its structure. Many galls, excited by colonies of the larvæ of *Diptera*, or *Hemiptera*, or by *Phytopti*, illustrate this point also.

9. The galls caused by parasitic fungi or by bacteroids are illustrations of the action of an irritant without producing any perceptible mechanical injury. See the beautiful gall on the Alpine rose, fingers and toes on the cabbage plant, etc.

10. While some galls are remarkable for their striking and well-defined or exceptional forms and structure—as the cottony gall on the oak catkin and the Bedeguar—many are irregular and variable in form and size, indefinite in outline, and are but slightly heterologous. Between these extremes all gradations are found. Generally galls caused by colonies are more irregular in form, as are also those which involve axes or fibrovascular bundles.

11. Some local hyperplasiæ, like the "cankers," are the outcome of mixed causes, and appear to result from the combination in various degrees of a process of healing after injury, often of mechanical origin, with the reactions of the healing tissues to irritation, as well as with destruction due to saprophytic fungi or bacteria.

12. I must refer briefly to witch-knots and allied malformations. Some of them—for example, those on the silver fir and on the wild cherry—are due to parasitic fungi, and some to *Phytopti*. I think the action of both is upon the very young growing point in a bud, but as yet the causes of witch-knots are not made out, nor has their early development been sufficiently studied. My present view is that by irritation of the growing point a reaction follows which results in the formation of an excessive number of buds and shoots, which overcrowd and often kill each other. The whole ætiology is certainly complex, and involves several factors; but in one species I have found buds with two to five young shoots springing from one base, and exhibiting the action of a process which combines multiplication of organs with anticipation of evolution, or, as the teratologists would say, polycladia with prolepsis.

These examples show some of the grounds upon which is founded the hypothesis, previously stated, that the irritant is an organic chemical substance, and also support the view that the process of irritation is some gentle persisting disturbance of the metabolism of the living cells, during which cell multiplication is inhibited where it first acts, but stimulated just outside that part. Such disturbance is propagated in some unknown way through the gall tissue so as to act differently at different distances in different directions, and may extend to tissues outside the true gall, and varies at different stages of the evolution of the gall.

The process of reaction, which is necessarily conceived of simultaneously with that of irritation, has its source in that fundamental faculty of repair and reproduction which plants, in common with all organisms, necessarily possess. The power of reaction to irritation resides in all the living cells, although most marked in the younger, as is also true of the processes of repair and of reproduction. The process itself may be conceived of as a compensative cell proliferation directed and modified in its character by the irritant, so that the result is at once heterologous and specific.*

Two main modes of these reactions can be distinguished: *a.* The first product of irritation is an embryonic meristem, which subsequently undergoes a kind of metamorphosis during its evolution comparable with that of a fertilized ovum, and sometimes produces a semi-independent mass comparable with a new organ and useless to the organism it grows from. *b.* The first product is but a slight modification with proliferation of existing cells, which subsequently change gradually and slightly, so that the result is less heterologous and nothing resembling metamorphosis is seen. I am disposed to speak of these successive generations of cells gradually becoming more degraded, in the sense of being less adapted to the wants of the organism which produces them, as being due to a process of true degeneration, and I would not use, as is often done, the same word for a quite different process—namely, that gradual change in the material of a persisting cell which leads to necrosis. In all these reactions the first cell proliferation is independent of the development of fibro-vascular bundles; indeed, the latter waits upon, and is measured by, the former.†

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* I may remind you that while the larvæ of the *Cynipidæ* are not furnished with strong mandibles, alimentary canals, or anus, and live only upon very nutritious diet, those of the saw-flies have these organs well developed, and eat coarse food.

* Perhaps the most striking instances of the influence of the irritant in directing the process of reaction so that the result may be to its own advantage are those in which, when the gall is ripe and the inclosed insect not furnished with strong mandibles so as to be able to eat its way out of prison, it dehisces as some fruits do, and lets the enemy escape. The delicate mechanism by which this dehiscence takes place is evolved under the influence of the embryo. See the gall upon a species of *Galium* and many others, especially such as are due to *Diptera* and *Hemiptera*.

† A good illustration of this is seen in the galls upon the oak catkin. Normally, the rhachis dies and falls early, but when a gall is developed the basal part of the rhachis grows larger and lives longer; indeed, so long as the gall is growing.

I must say a few words about repair in plants. When a part of a living plant is injured it dies, if the damage be serious, and the nearest living cells multiply, so that in wounds of parenchyma one and the same kind of tissue known as cork always results, whatever may have caused the injury, and in wounds which involve the great cambium, repair is effected by another tissue, known as callus, which is always the same whatever may have produced the injury. Repair then is not specific in relation to the cause of the injury, but in similar tissues is always the same. Both cork, which is the scar tissue of plants for injuries of parenchyma, and callus, which is the same for wounds of axes, are normal and permanent plant tissues, and the latter has within itself all the potentialities of the whole plant, being able to reproduce roots and shoots. The whole process of repair is a physiological one, that of reaction to irritation a pathological one, and it is only when the two processes are mixed that confusion can arise.

As all the reactions to true irritation are by the hypothesis inflammations in plants, this expression includes both those well-defined galls of complex structure and somewhat independent life which are usually called tumors of plants, and also those more variable and indefinite local hyperplasiæ due to irritation which are often so slight as to escape attention, and would more naturally be spoken of as inflammation. In all, however, the irritant directs the reaction and the product is specific. I conceive that malformations, such as witch-knots, etc., belong to the same category, that they differ from galls mainly in that the reaction which produces them results from the irritation of a developing germ, and that it produces rather an abnormal arrangement of otherwise normal organs than a true local hyperplasia.

As morbid processes in plants belong to the domain of general pathology, they may properly be considered in relation to the corresponding processes in animals.

That the reactions of all living tissues to irritants are rightly considered as inflammations I think will receive general assent. Nor can I doubt your support of the proposition that a general theory of inflammation should include all organisms. I do not, however, know any such theory comprehensive enough to include plants. The latest and perhaps the widest is, I think, that recently put forward by Metschnikoff, in his *Leçons sur la pathologie comparée de l'inflammation ;* but it is scarcely wide enough to include plants, although it is founded upon a very wide zoological basis.

With great trepidation I now venture to suggest one which is sufficiently comprehensive, and may be stated somewhat in the following terms:

In virtue of those necessary and inherent faculties by which all organisms repair damage, living cells react in response to true irritations by a proliferation with modification directed by the irritant, and not beneficial to the organisms in which the process occurs.

Those, if any there be, who accept this view of inflammation, will as a consequence consider all inflammations specific, even where the phenomena ascertained do not suffice to prove them to be so. From the purely clinical standpoint many inflammations would still be spoken of as simple or common, but with the progress of ætiological knowledge the number of specific inflammations would increase at the expense of those which from lack of ætiological knowledge only are called common.*

By the adoption of these views I venture to hope our conceptions of the relation which exists between the processes of repair and of inflammation would be more definite and true to Nature. The search for causes would be more productive because better defined, and a much-needed distinction would be made between the cause of a species of inflammation and the causes and conditions of the steps of the process in general. We should less often find in the ætiological section of a treatise upon some visceral inflammation elaborate statistics relating to age, sex, employment, season, etc., and more often a candid avowal that we know nothing of the true cause, and only something of the conditions which more or less favor its operation.

Something would, I think, be gained to the science of pathology by its closer association with ætiology, and our classification of diseases would be improved by an increase in the number of specific maladies.

The arguments I have used in reference to inflammation admit of application to fever, although the equivalent of that process is not yet recognized in plants; but, remembering how many fevers are now known to be specific, their intimate connection with inflammations, and the specific effects of poisons and drugs both upon the organism as a whole and upon the several organs and tissues, I am much disposed to advocate such an extension of the doctrine, which is indeed apparently a necessary corollary from the truism that causes are factors which must always affect the results in some degree.

The greater complexity of structure and function in the higher animals than in plants, and especially the more immediate dependence in the former of every tissue and organ upon the integrity of the nervous and circulatory systems, sufficiently account for those differences in the inflammatory process which are known to exist.

A Proposed Monument to M. Duchenne.—The *Union médicale* states that the municipal council of Paris has voted the sum of 200 francs as a contribution to the cost of erecting in La Salpêtrière a monument to Dr. Duchenne, of Boulogne.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) *when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us;* (2) *accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue;* (3) *any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.*

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

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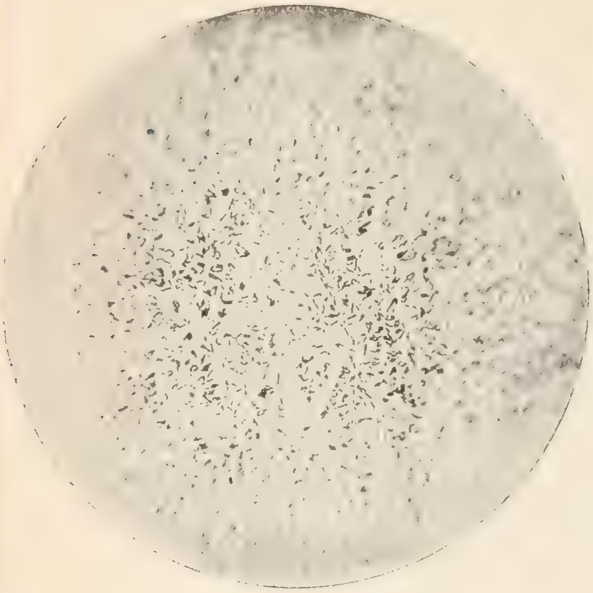
* By this theory in animals as well as in plants all those tumors which are due to a reaction to irritation would be included in the term inflammation, as probably also would be some of the malformations.

ARTICLE BY DR. KOPLIK.



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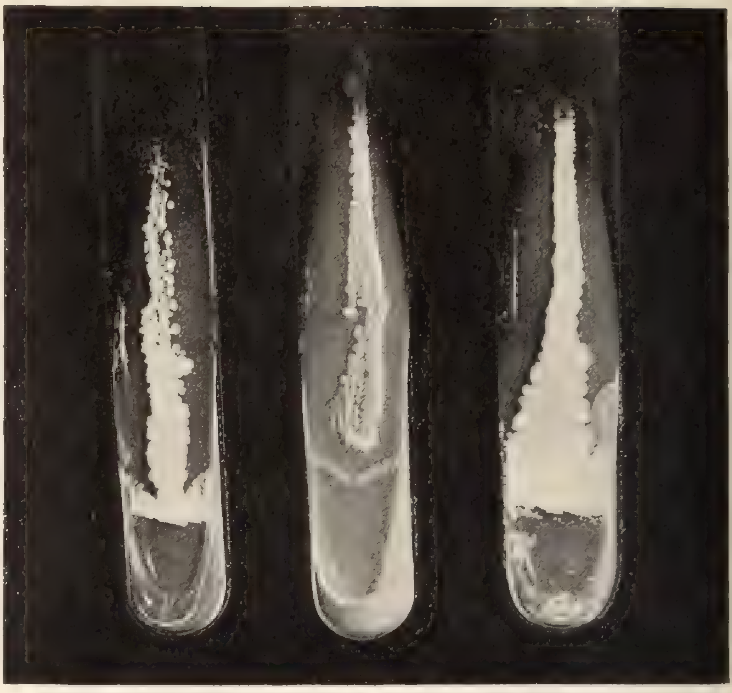

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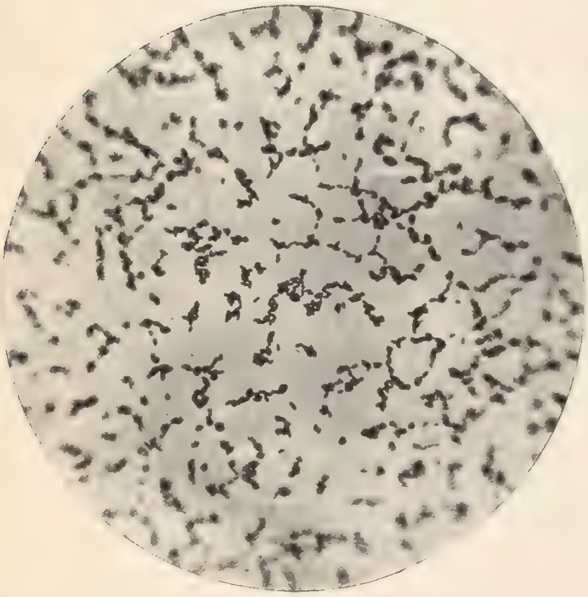

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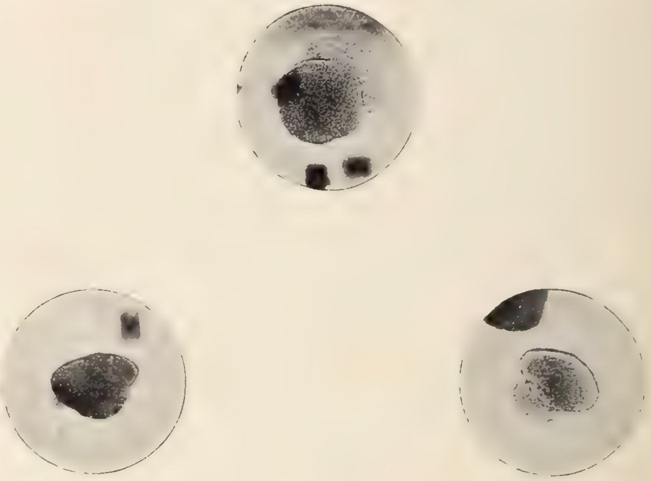

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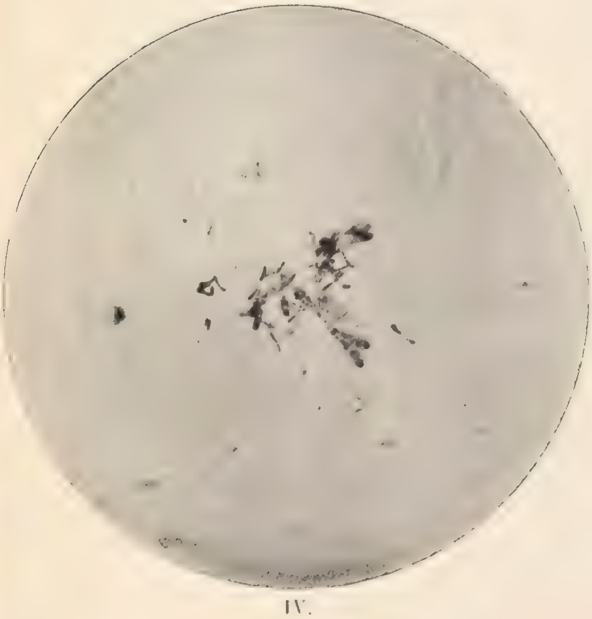

IV.

Microphotographs.

I. Loeffler bacillus. Blood-serum, pure-culture contact preparation (Klatsch preparat). × 650. Gram stain, apochromatic lens, Zeiss apparatus, zircon light.

II. Pseudo-bacillus. Blood-serum, pure-culture contact preparation. Gram stain. × 650. Same apparatus.

III. True and pseudo bacillus upon glycerin-agar of the same period of development—natural size—the center tube being growth of true bacillus, the others pseudo, more luxuriant, and opaque.

IV. Involution forms of the Loeffler bacillus. Blood-serum. Methyl-blue stain. × 650. Same apparatus and lens.

V. Colonies of Loeffler bacillus upon glycerin-agar, twenty-four hours old. × 90.

Note.—The above microphoto plates have been photographed with the express object in view of presenting to the practitioner that appearance which he would obtain were he to use the one-twelfth Zeiss immersion. No exaggerated pictures are given.

THE NEW YORK MEDICAL JOURNAL, August 27, 1892.

Original Communications.

FORMS OF TRUE DIPHTHERIA WHICH SIMULATE SIMPLE CATARRHAL ANGINA.

THE SO-CALLED DIPHTHERITIC ANGINA SINE MEMBRANA.

By HENRY KOPLIK, M. D.

Since Loeffler's first very modest publication upon the true nature of diphtheria, with its careful and very conservative conclusions, the literature of this disease has received a great number of conclusive additions in the form of bacteriological contributions. As is well known, Loeffler did not build great hopes upon the very searching results obtained in his first paper. Confirmative evidence from all directions tempted him to renew his investigations and strengthen the conclusions of his first paper. To-day it would be a little superfluous to reopen the story of the literature of the Klebs-Loeffler bacillus. Its specificity is well and broadly recognized in the medical and scientific world. To-day our more thorough understanding of the ætiology of diphtheria and other membranous inflammations of the fauces resembling true diphtheria owes much to the impetus given to modern workers by the developing school of bacteriology of Koch. True, the results obtained through this method of research have in many ways confirmed what had been observed clinically for decades before Koch and his pupils entered the field. Yet to the close study of the disease from the clinical and pathological standpoint of past years have been added facts which must in the future aid in the treatment and especially the prophylaxis of the disease. If to-day the accumulating work upon diphtheria emanating from such men as Buchner, Fraenkel, Brieger, Kitasato, Roux, and others, gives us a most intricate mesh of doctrines, the clinician must not reproach such work with the stamp of the impractical and speculative. Sooner or later these seeds will bear fruit at the bedside, for, though working apart, the two lines of study at the bedside must inevitably combine to the ultimate solution of the clinical problem. The clinical work of such minds as Bretonneau and Trousseau remain classic because, though laboratory work has made great strides since the time when these minds controlled and molded the medical thought, it has in many aspects confirmed the correct observations of these men at the bedside. Thus to-day, were we deprived of the masterpieces of these clinical giants, the field would be narrowed and darkened considerably, especially so in diphtheria as we know it to-day. Virchow in the pathology of diphtheria still challenges criticism, and to-day there is a threatened reaction in favor of the doctrines of this master mind. Thus this disease has boasted the greatest observers clinically and at the autopsy in its study, and in recent years bacteriology has furnished us with an additional weapon which threatens to be one of no mean force to combat the dangers of this affection. We understand to-day that the membrane is not all of diphtheria, nor is diphtheria the disease simply the membrane itself. Diphtheria the disease is an entity to be understood apart from the local manifestation.

Trousseau and since his time many clinicians have insisted upon attenuated forms of diphtheria, since the clinical symptoms are often equivocal. Such anginas are often slight; they recover without the formation of membrane, but they are nevertheless the starting points of severe epidemics (Roux, *Annales Pasteur*, p. 403, 1890). Again, in severe epidemics of diphtheria, we have clinically anginas which are as prostrating and severe as forms of diphtheria (Jacobi, 1860). The presence of membrane, we are now shown, is not in itself a simple, but a complex entity; it may be caused not only by a true diphtheritic micro-organism (Loeffler), but cumulative evidence points to an organism equally capable of producing such membranes (Prudden). Again, the micro-organism of diphtheria (Loeffler bacillus) has been supplemented by another of apparently innocuous nature—the so-called pseudo-bacillus (Hofman). The correct understanding of the processes of diphtheria at the bedside to-day must presuppose a just appreciation of the rôle played by all of the above factors in this disease. Gerhardt in 1883 reiterated the doctrines of Trousseau in his discussion at the German congress of physicians, and later on Escherich has taken up this point of diphtheria sine membrana. Roux, in the annals of the Pasteur institute, also calls attention to the marked forms of diphtheria whose diagnosis the physician hesitates to put to the door of diphtheria when confronted by the rapid recovery of his patient. During the past year it has been my fortune to be thrown amidst a material which included quite a number of cases the investigation of which has tended to give me some light upon the nature of these so-called doubtful cases of diphtheria. They are brought forward in the hope that with the aid of new methods I may have been fortunate in strengthening the doctrines promulgated above by the clinicians of note.

The cases which will be brought forward here are those in which the clinical features of the disease were not typical, the membrane in the throat was not present in rare cases, and in others it was so little developed that the physician could with justice waver in his diagnosis between diphtheria and simple acute catarrhal angina. My methods of examining each case were as follows: A small piece of mucus or membrane or shred of exudate was removed from the tonsil with a sterilized loop or minute ear curette or scoop. It was immediately carried over the surface of two or three tubes of Loeffler blood serum; these tubes were placed in the thermostat. After twenty-four hours other serum tubes were prepared from the first crude tubes. In this way a rapid or vigorous mixed growth was obtained; from this the first dilutions were made after the manner of Loeffler and single colonies upon serum tubes obtained. The Loeffler bacillus, which appears quite abundantly after twenty-four hours, can be isolated thus in separate colonies. If a pure culture was to be proved, plates of agar, simple alkaline or glycerin agar, were made with a growth from a serum tube which had been prepared from a single colony upon serum; in this way streptococci could be eliminated, for they are an almost constant factor to be looked for. One pure colony taken from agar, its growth could again be observed upon blood serum agars of various kinds—bouillon, gelatin, potato. In this way the bacillus of Loeffler was isolated in all cases which I looked upon eventually as true diphtheria. After isolation the pure culture, either from a serum tube suspended in sterile water or in bouillon culture, was injected into guinea-pigs to test the virulence of the micro-organism. In no case was this last procedure omitted. For it will be shown that cases were met in which a bacillus—the pseudo-bacillus of Hofman—was isolated which were not true diphtheria and which were harmless when injected into animals. The streptococcus which was found in the majority of my cases as a constant accompanying micro-organism even when the Loeffler bacillus was present was isolated, but with one or two exceptions it was not injected into animals, this being a distinctly different branch of work. The streptococcus was cultivated upon various media and will be treated of later.

Another branch of my work included the following out of certain lines of observation upon the growth characters of the true bacillus of Loeffler and the relation of the pseudo-bacillus of Hofman to the true bacillus as tested upon animals; the results hinted at here will be detailed also.

In the clinical part of this work it will be more instructive to divide the cases into groups which present certain characters, and in which the cases of true diphtheria are contrasted with those which investigation showed to be non-diphtheritic and of a simple infectious nature. The first group includes a set of cases the occurrence of which has been commented upon by clinicians (Trousseau, Gerhardt, Escherich, Roux). In these cases at first, or even in the whole course of the disease, there is no manifestation of membrane; the diphtheria runs its course, and the closest and minutest examination of the fauces shows no membrane or traces of membrane. But the cases below show, what it is not always possible to actually demonstrate, that such cases may give rise to other cases in which the diphtheria may run its course without any membrane appearing in the throat. Such cases may end in recovery, but the third cases of the series may, infected by these cases, finally develop membrane in the throat and result fatally. It is fortunate that such a series can be presented here:

CASE I.—Female, aged four years. Eight days before this visit she had been brought to me suffering with a follicular amygdalitis; this had apparently subsided, and there were no other symptoms. Two days before this visit, the father says, the child was suddenly attacked with a croupy cough and noisy breathing.

Status.—When seen was a robustly-built child; temperature, 101°. A constant stridulous cough, and the breathing noisy and stridulous to slight extent. No cyanosis. Child generally in excellent spirits.

Herpes labialis; tonsils are much swollen; but there are no signs of a membrane. The surface of the tonsils has a smoky appearance, as if breathed upon; glandular swellings at angle of jaw.

Complete recovery in four days without any development of membrane on tonsils or pharynx or any serious symptoms.

Scrapings from tonsil showed Loeffler *Bacillus diphtheriæ*. Guinea-pig inoculated died with characteristic symptoms in forty-eight hours.

CASE II.—Sister of the above-mentioned patient, aged five years and a half. On the third day of the illness of the above child this sister, who, the father said, had been well and kept as much as possible in a tenement apart from the first case, became affected with the same croupy cough and croupy breathing. Examination revealed two large tonsils quite red, but no membrane; the breathing was distinctly stridulous; the tonsils were hazy, as above; temperature not taken. The child made a good recovery. Though looked at daily, no membrane in throat. Mucus from the tonsil examined; Loeffler bacillus. Death of guinea-pig, experimentally injected, with characteristic symptoms.

CASE III.—Sister of the preceding two patients, aged two years and a half. Had been perfectly well until two days after the illness of Case II had set in. She complained of nothing, but, as stated, two days after the second case became ill and as Case II was recovering, she became ill with a croupy cough and breathing. Brought to me the following day, the sixth after the first of the three cases was taken ill, and at a time when the first case was well and the second case convalescent.

Status.—Well-nourished child; both tonsils much swollen, coated with a hazy, translucent, bluish pellicle of mucus; redness of underlying tonsil; no membrane; no yellow follicles; *no glandular swellings* at the angle of the jaw; temperature, 102°. Croupy cough and croupy breathing just discernible.

The next day yellow specks of membrane appeared on the tonsils and at the back of the pharynx. The night had been restless; the child was much sicker than the first two children. On the third day the membrane had spread and was more marked on both tonsils. Glandular swellings at the angle of the jaw became marked; difficulty in breathing. On the night of the fourth day of illness the child died of laryngeal stenosis, parents refusing to allow operative procedure.

Bacterioscopic examination of the secretion on tonsil at first visit, when no membrane was visible, gave, as also the second day, when yellow specks were present, the Loeffler bacillus in almost pure culture, though a streptococcus was also present and isolated.

Inoculation of the bacillus into a number of guinea-pigs proved fatal, with symptoms to be described as characteristic. From the foregoing it will be seen how tonsillar and laryngeal affections, truly diphtheritic, but with a mild course, can, without exhibiting any membrane in the whole course of the illness and though mild in themselves, give rise to a fatal diphtheria in the end. Contrasted with such cases, whose diagnosis must for the present remain difficult from a purely clinical standpoint, and in which our suspicions are first aroused, as in the first case, by the croupy cough and slight croupy breathing, are the following, which are not diphtheritic, but in which the resemblance, clinically, is so close as to mislead at first:

CASES IV, V, VI.—Family of three children, males, aged two, four, and six years, respectively. For the past five days the baby, aged two years, has had a cough and sore throat; the brother, a boy of six years, has been sick for two days; and the third patient, a boy aged four years, has been sick for one day with slight cough; no croupy breathing; pains in bones and malaise.

Status.—All three children have swollen tonsils; red; no membrane of any kind in throat. In the oldest boy there are a few yellow spots on tonsils. The boy aged four years alone has croupy cough; slight fever.

In none of the children are glandular swellings present. All the children made good recoveries.

All tonsils scraped, put on serum; nothing but streptococci cultivated; no bacilli of Loeffler.

Cases IV, V, and VI, given in brief, so closely resembled the first three as to have been assumed by me, before the result of bacterioscopic test was known, as truly diphtheritic, but it will be seen that the results proved otherwise.

A second group of cases investigated by the author are those in which the membrane appears as a pultaceous yellow mass on the tonsil. We are immediately impressed with the diphtheritic character of these cases until we encounter other cases in which the membrane has the character of these cases, but developed imperfectly and only in patches. The latter class of cases shows the exudate upon the tonsil as a pulpy, stringy mass, deficient in places. Some of these cases were very similar to the first diphtheria, but the bacillus found in one case to be described under the pseudo case proved to be non-diphtheritic.

Case VII. *Pultaceous Yellow Mass upon the Tonsil; True Primary Diphtheria.*—Boy, aged three years, has been ill for three days; complains of a soreness in the throat, has fever, and is restless at night. Examination shows temperature 103°; a yellowish pultaceous mass upon the right tonsil; the left tonsil enlarged, but not covered with membrane. Enlarged glands. Streptococci and Loeffler bacilli. Death of numerous animals with characteristic lesion after injection.

Case VIII.—Female child, aged three years, has been well up to three days ago, when she became ill with sore throat. Has, on examination, enlarged tonsils, with no distinct membrane, but a stringy, yellow mucoid material on the right tonsil, with enlarged glands on that side. Streptococci; no bacilli found.

Case IX.—Male baby, aged fourteen months, has been ill for five days. Has had fever; difficulty in breathing; does not nurse.

Status.—Both tonsils enlarged; whitish-yellow streaks running diagonally across, connecting the crypts of the tonsil; tonsils covered with a yellowish mucoid material; both tonsils much swollen; follicles seen here and there; glands at the angle of the jaw slightly swollen; temperature, 103°. Bacterioscopic examination showed streptococci.

The writer has been repeatedly told that follicular appearances upon one or both tonsils would lead to the exclusion of diphtheria. So certain did this test appear as con clusive in the minds of some that both in my own presence and in that of other physicians, the probe test of trying to enter a suspicious speck upon the tonsil thought to be follicular was attempted. It need not be pointed out that in children the simple procedure of inserting a probe into a follicle, or testing such suspicious specks upon the tonsil, is very difficult. It will be shown that even when follicular appearances are well marked, diphtheria of a virulent kind coexists. We therefore must regard all specks of membrane isolated upon the tonsil, whether accompanied by follicular appearances or not, as suspicious, and likely to prove diphtheritic. What follows will illustrate this.

Third Group. Case X.—Speck upon the tonsil difficult to distinguish from a follicle. Diphtheria. No distinct membrane.

Female, aged three years and a half, sick for one day with fever, malaise; the tonsils are enlarged and patient can not swallow; no glandular swellings at the angle of the jaw. The left tonsil has a small greenish-colored speck the size of a pin's head; there is nothing else to be seen; this speck looks very much like a follicle.

Bacterioscopic examination revealed streptococci and Loeffler bacilli. Two guinea-pigs inoculated with same died with characteristic symptoms.

Several physicians who saw this case held different opinions as to its real character.

Case XI.—Boy, aged seven years, sick for one day with sore throat.

Status.—Small yellow spot on the left tonsil like a follicle; some little fever; no glandular swellings at the angle of the jaw; no other symptoms.

Streptococci only present upon bacterioscopic examination.

Case XII. *Small Patches of Membrane on Uvula and Soft Palate. Not True Diphtheria.*—Female baby, aged ten months, has been sick for four days with fever; has a croupy cough; has also a discharge from the left ear, yellowish pus, for the past two days.

Status.—A well-developed child; small spots of whitish-yellow membrane on each side of the uvula spreading up toward the soft palate. No membrane on the tonsils; the same are red and enlarged; no glandular enlargements at the angle of the jaw; general condition good; has a croupy cough and voice.

Bacterioscopic examination reveals streptococci in the throat and in the pus of the ear; in the latter a bacillus not with any distinctive characteristics.

Case XIII. *Small Spot on Tonsil and Posterior Pharyngeal Wall. Not True Diphtheria.*—Male, aged two years and a half, sick for two days with a croupy cough and breathing; has no eruption on body.

Status.—Tonsils are both swollen; membrane on the posterior half of the right tonsil the size of a lentil, and a spot on the posterior pharyngeal wall on the left side. Temperature, 103°.

Bacterioscopic examination reveals streptococcus only.

It should be mentioned that, in order to guard against error, when a small spot of membrane existed, the whole speck was removed entire and carried over several tubes of Loeffler blood serum. In this way we could be certain that if bacilli were present they would have appeared.

Case XIV. *True Diphtheria simulating Follicular Tonsillitis. Specks of Membrane combined with Follicular Plugs.*—Male infant, aged eleven months, had been previously in the best of health. Suddenly attacked the night previous with fever, swelling of the tonsils, and peculiar rasping breathing.

Status.—Tonsils both swollen. On the left a patch of whitish membrane, on the right tonsil no membrane, but follicular spaces and plugs were seen as streaks and dots on the left tonsil. A few specks only seen by careful inspection on the posterior wall of the pharynx. Temperature, 101°. General state very good.

Loeffler bacilli found in above tonsillar patch in almost pure state; few chains of streptococci; two injected guinea-pigs died with characteristic symptoms.

Fourth Group.—To many readers it has often been a very trying situation to be confronted with cases very similar in clinical aspects to those to be described, to pronounce upon them, and find subsequently that the course of the disease was more virulent than at first supposed. Those tonsillar affections, among other things, present the tonsil the seat of ulceration, a necrotic loss of tissue; the base of such excavations may be covered with a dirty-green layer of exudate or specks of exudate; the rest of the tonsil may present specks or shreds of exudate with or without follicular appearances. Henoch has described such cases. Many still talk of these cases as ulcerative sore throat. Some of them are virulent diphtherias, others do not present any diphtheria upon bacterioscopic examination. Many of these cases will give histories which are puzzling, to say the least. A parent who one supposes is very careful will tell the physician that the child has been ill only a day. Inspection of the throat will show the above ulcerative state, proving that the patient must have been ill for a much longer period than that given in the history, but the symptoms were so slight as to escape the observant eye of the parent. Many of these cases being diphtheritic, the danger which such little patients present to other children can be well imagined.

Case XV. *True Diphtheria; Necrosis of Tissue; Ulceration in the Tonsil; Deposits elsewhere.*—Male infant, aged ten months, has been well, according to the history given by the mother, up to a day ago, when the baby developed a sore throat and croupy cough.

Status.—A well-nourished infant; both tonsils the seat of ulceration and covered with a yellowish deposit in places; there is a small patch on the posterior pharyngeal wall; croupy cough.

Bacterioscopic Examination.—Loeffler bacilli. Death of inoculated guinea-pig within thirty-six hours of characteristic diphtheria.

Compared with the foregoing is the following case, which was proved by several inoculations to be non-diphtheritic, but which caused me to be anxious at first as to its true nature:

Case XVI.—Female infant, aged twenty-two months, had been perfectly well until a week before visit; it has had a cough, and this has been supplemented a day ago by fever and an exacerbation of symptoms.

Status.—Both tonsils enlarged. Small specks of yellow on both left and right tonsil. Left has a necrotic excavation (as described by Henoch). No membrane. Mother says there has been diphtheria prevalent in the rooms back of her own in the tenement. Recovery.

Bacterioscopic examination revealed only streptococcus.

In this last case the tonsils were scraped two succeeding days and several tubes inoculated each time, but no diphtheria found. We would have expected a contrary result from the history of fatal diphtheria on the same floor in the tenement. Granted that the disease had come to the writer in the convalescent period, the bacilli should have not been absent. Roux has found bacilli of Loeffler in the throats of patients many days after the membrane had entirely disappeared from the fauces.

Fifth Group.—There are forms of tonsillar affection, some of them true diphtheria, in which the diphtheritic local manifestation is not membrane, as if applied to the surface of the tonsil, but rather looks like a surface imbedded in the tonsil. Some of these surfaces, which look like fibrin plugs, of quite an extended diameter, resistant, and not easily broken down, have an indefinite yellow-pink color; others are quite yellow. They will persist for days with scarcely any constitutional symptoms, so that (as in Case XVII) it is difficult, even after finding the bacilli, to realize diphtheria of so mild a course.

Case XVII. *Diphtheria; no Membrane, but an Imbedded Surface on the Tonsil, of Indefinite Yellow-pink Color.*—Female baby, aged fourteen months. Mother has within a short time lost two children with diphtheria; this child took sick a day ago; does not nurse; slight fever. In looking into the mouth, the fauces are red, and nothing seen at first. But, when the baby gags, a flat surface is seen imbedded in posterior part of the right tonsil, as large as a split pea, of an uncertain yellowish-pink color; scraping the same makes it bleed.

The child ultimately got well, and surface became the color of the normal tonsil.

Bacterioscopic Examination.—Loeffler bacilli. Guinea-pig died within forty-eight hours after inoculation.

Case XVIII. *Not True Diphtheria.*—Male infant, aged two years, has been sick for four days with cough and fever; loss of appetite; some vomiting.

Status.—Examination shows on the left tonsil imbedded fibrinous plug; no glandular swellings at the angle of the jaw; no croupy cough or breathing; no distinct membrane elsewhere; temperature, 102°.

Bacterioscopic scrapings of the fibrin plug give pure culture of streptococcus.

Case XIX.—Female, aged seven years. For the past six days the child has had a sore throat; tonsils enlarged, red; a suspicious spot of yellow-greenish color, size of lentil, imbedded in the left tonsil; is resistent; can not be removed; apparently fibrinous; does not break down. Though the patient has been feverish, temperature to-day normal. Diphtheria (?) has been in the same tenement, floor above.

Bacterioscopic Examination.—Streptococcus pyogenes aureus.

In contrast with all of the foregoing cases the author desires to simply record the following cases of true primary membranous diphtheria, and also one case of streptococcus diphtheria complicating scarlet fever:

Case XX. *Primary Diphtheria; Membrane.*—Male child, aged four years. Sick for the past two days with fever; sore throat. Has had intercourse with the *mother* of a child that had died with diphtheria three days previous, but the child was not exposed to the case of diphtheria itself. The child that died was two years old. There was fever; slight swelling of the right tonsil, with distinct membrane on the same; swelling of the glands at the right angle of the jaw; no croupy cough.

Bacterioscopic Examination.—Streptococcus and Loeffler bacilli. Death of guinea-pig injected with pure culture in forty-eight hours.

If the history and mother are to be credited, this is a case in which the diphtheria was conveyed to the child by the parent of another case.

Case XXI. *Diphtheria supervening upon a Follicular Affection of the Tonsil.*—Male, aged two years. This child, a well-developed lad, had been under constant daily observation for a week, suffering with an apparently simple follicular amygdalitis and bronchitis. Suddenly, after six days, without previous warning, the child developed croupy cough and slight croupy breathing. For the first time, a minute patch of membrane developed on the right tonsil, and another on the posterior pharyngeal wall. Temperature, 101°. Glands on left side slightly enlarged.

Bacterioscopic Examination.—Streptococci and Loeffler bacilli. Two guinea-pigs injected died with characteristic symptoms.

Child died within forty-eight hours.

Case XXI illustrates very forcibly the form of diphtheria called by Trousseau "croup d'emblée." The patient, who has suffered for a time from slight throat symptoms, and never having exhibited any membrane in the throat, will suddenly develop symptoms of beginning laryngeal stenosis; small specks of membrane will appear, and the fatal issue remains but a matter of a few hours. We should always be on the lookout whenever, in mild cases of tonsillar affection, exacerbations of symptoms set in. Examine the throat for traces of membrane.

Case XXII. *True Diphtheria, with Membrane.*—Male, aged three years and a half. Has been ill for six days; both tonsils are exulcerated and covered with yellow-white patches of membrane; a small patch alongside the uvula. Enlarged glands on both sides at the angle of the jaw. Temperature, 101°; pulse, full and regular.

Bacterioscopic Examination.—Loeffler bacillus. Death of injected animals with characteristic symptoms.

Case XXIII. *Streptococcus Diphtheria complicating Scarlet Fever.*—Female, aged four years. Sick for two days (so mother says); had chills; fever now; sore throat; tonsils are both swollen, and covered with a greenish pseudo-membrane on the right and shreds of membrane on the left; slight adenitis on the right side; nothing on the left side; has a scarlet-fever eruption.

Bacterioscopic examination shows streptococci.

It is necessary, in order to complete the detail of cases, to record those cases which excited distrust from a clinical standpoint, but which, upon examination, proved to be simple angina:

Case XXIV. *Angina; Nasal Discharge after Measles.*—Male, aged three years. The child two weeks ago had measles. Within the past two days has complained of soreness of the throat, and had a discharge from the nose.

Status.—Well-nourished child; has on various parts of the body signs of fine desquamation; tonsils enlarged, red, swollen; a few yellow spots on the same; a suspicious whitish mucoid discharge from the nose, containing *flakes*, eroding the nostrils; left knee painful and swollen; temperature, 102·5°.

Streptococci only found.

Case XXV.—Male, aged four years. Has had slight cough, fever, and sore throat for a day past. The child is well nourished; the right tonsil is swollen, covered with pale, smoky mucous patches; small pale patches of whitish mucoid matter on the soft palate; left tonsil swollen; glandular swelling at the angle of the jaw, especially marked on right side; no yellow spots on tonsils.

Streptococci found only.

Case XXVI.—Male, aged two years. Sick for two days with swelling on side of the neck; fever at night; restless.

Status.—Tonsils much swollen; uvula swollen; glands at side of neck swollen; no membrane; no fever.

Streptococci found. Recovery.

Case XXVII.—Female, aged eight years. Sick for one day with chilly sensations, fever, and sore throat.

Status. — Tonsils enlarged; follicular appearances well marked; no membrane; slight glandular swelling at angle of the jaw on the right side.

Streptococcus only.

Case XXVIII.—Female, aged two years. Sick for three days with cough of a croupy character and fever; tonsils large, but not excessively so; extensive bronchitis; no membrane on tonsils; cough is metallic; tonsils covered with a bluish, smoky mucus; no swelling of glands at the angle of the jaw; temperature, 102°.

Day after, no membrane; temperature, 99·5°.

Streptococci.

Fraenkel's diplococci.

Case XXIX.—Female child, aged eight years. Has for two days had a croupy cough; no stridulous breathing; temperature, 101°; tonsils red, swollen; no membrane; no glandular swellings at the angle of the jaw; general condition good.

Streptococci found.

Case XXX.—Robust boy, aged three years and a half. Sick for one day with a croupy cough; both tonsils red, enlarged; have a slightly cloudy appearance; no membrane; glands can just be felt at the angle of the jaw, both sides; temperature, 101°.

Staphylococcus pyogenes aureus found only.

Case XXXI.—Male, aged three years and a half, strong and robust. Sick one day; tonsils enlarged; typical follicles seen with yellow plugs; temperature, 103°; no enlarged glands at the angle of the jaw.

Streptococcus found.

Case XXXII.—Male, aged three years. Sick for six days with croupy laryngeal cough; has not had marked fever; is quite ill.

Status.—Croupy cough, but no stridulous breathing; no enlarged tonsils; no membrane; no fever; but tonsils and pharynx much injected. There is acute general bronchitis.

Streptococcus found.

Case XXXIII.—Female, aged one year. Child has been coughing for two days.

Status.—General bronchitis; general redness of the fauces; no membrane; no swelling of glands at angle of the jaw; a child of seven years had died in the same family the day of visit to me of diphtheria.

Streptococcus found only.

The Klebs-Loeffler Bacillus, the Pseudo-bacillus (*Hofman*), *the Streptococcus; their Relation to each other.*—The Klebs-Loeffler bacillus is a most difficult micro-organism to work with, because, unless certain distinct lines are followed in its cultivation, results are at times of a contradictory nature. It has been seen how the pseudo-bacillus of Hofman owes its discovery to a mere accident of cultivation. Loeffler himself subsequently found, when his attention was called to the fact by Hofman, two micro-organisms growing side by side—the one virulent when injected into an animal, the other innocuous. In his own work the writer has found that the most uniform and very reliable results, both in culture media and animal experiment, can be obtained if the lines recently laid out by Behring in his work upon the cure of diphtheria in guinea-pigs is closely followed. These points will be alluded to later.

If a piece of diphtheritic membrane be passed across a surface of Loeffler blood serum (sterilized by Hueppe's method), there appears within twenty-four hours a diffuse whitish or gray-white growth, which can be distinctly differentiated from a streptococcus growth, which is always of a finely-pointed, dotted appearance, whereas the diphtheria is a coarser growth. If from such a crude tube a very minute quantity be suspended in bouillon, by making dilutions with a platinum loop and respreading a few drops upon fresh serum, isolated colonies can be obtained.

These colonies, after twenty-four hours in the thermostat, appear as pearl-gray points, raised, more white at the summit than the periphery. Such a colony can be again spread upon serum. From this tube, agar plates can be made, and an absolutely pure culture upon agar from a single colony growing in an agar plate can be easily obtained. Upon serum, however, the typical growth appears as a whitish layer which, when it grows older, has a yellowish hue (upon the serum sterilized by Hueppe's method). This layer is moist and will spread to a certain extent. Upon glycerin-sugar-agar the growth of the Loeffler bacillus is not very vigorous; it is seen after twenty-four hours as a delicate gray-colored, veil-like growth, in which the separate colonies show if the growth is thinly spread upon this agar; the tendency to spread is limited, and within a few days the growth has reached its height.

Alkaline agar, one per cent.: upon this medium—the most satisfactory, next to the blood-serum, upon which to cultivate the Loeffler bacillus—the growth is more vigorous than on the glycerin-agar or sugar-agar or glycerin-sugar-agar.

It is well here to speak of the colonies in agar; these have been scarcely described.

The typical diphtheria colony is a deep or superficial oval colony with a prolongation or extension of the growth on one side, sometimes both sides. This extension is like an apron, extends from pole to pole of the colony, and has been pictured by Fraenkel and Pfeiffer in their atlas.

When these colonies approached the surface of the agar, this prolongation or extension was given more opportunity to spread, and it was hence better developed than in those cases in which the colony was deep-seated. When near or on the surface of the agar, this apron breaking through one side of the colony really exceeded in diameter the original growth. The colonies have a granular appearance like the surface of a watch-case, and are whitish by reflected, and straw or light olive by transmitted light.

Other colonies seated deeply were round or nearly round, with clean-cut borders and no extensions, of about the same color as above.

Superficial colonies are very transparent; they spread on the surface, have a dark center or not, as the case may be; they are light straw-color by transmitted, and gray-white by reflected light.

Deep oval colonies exist which have absolutely no extensions (*Ausbruchtungen*), and are, as will be shown, composed of virulent bacilli.

Some colonies are round or irregularly spherical.

It will be shown how all these colonies are composed of Loeffler bacilli which, both in superficial and deep growths of the different forms, are virulent to guinea-pigs.

As stated, upon the surface of distinctly alkaline agar one per cent. the growth of the Loeffler bacillus is moist, more luxuriant, and retains a uniform virulence longer than upon any other form of agar.

In bouillon the author found variations which have been commented upon by Fraenkel, Brieger, and others. In some tubes of simple bouillon a cloudiness first resulted, then the bouillon cleared in the center and deposited a finely granular deposit at the sides of the tube and an abundant white sediment at the bottom of the tube; again, in other tubes the first general turbidity was not observed, the other features being the same. This, I think with Fraenkel and Brieger, is due to the amount of material from the agar or serum inoculated into the tubes. All tubes clear finally. The bouillon, which at first may have been alkaline, becomes rapidly acid in the thermostat. After a time a fine membrane which is composed of bacilli is formed on the surface of the bouillon. Sugar bouillon shows much the same changes.

In gelatin the growth takes place only above 20° (Celsius); at a temperature of 22° C. the growth in puncture appears as a finely-beaded streak with a very limited nail-head, with little tendency to spread on the surface.

Upon potato I find, as described by Welch, a growth which is the exact color of the potato—a little more white after a time and without luster, and can be detected by the fact of the lack of moist glisten to that part of the potato where the growth occurs.

I have been led to go into minute descriptions of cultures for the reason that I was convinced that some points given above and not brought out, at least prominently, by former writers, will be of use to others working in this line of study.

The Loeffler bacillus itself proved in my cases virulent to guinea-pigs, and this, with certain characteristic symptoms, corresponded exactly with that so often described, and the descriptions simply are a repetition of that first given by Loeffler—a non-motile bacillus, which is about the size of the *Bacillus tuberculosis*, but somewhat thicker. It has a peculiar stain with Loeffler blue or Gram, giving it a dotted appearance. No method of known preparation can discover spores in this bacillus, though before Loeffler studied it such were thought to exist on account of its dotted appearance. Some of the bacilli are distinctly club-shaped at one extremity, and this enlargement is sometimes quite marked. The so called involution forms will be described now for convenience.

Involution Forms.—In certain ways the Loeffler bacillus approaches morphologically close to the appearances given by some of the saprophytic bacteria. Not that the author wishes to trace any relationship between the two, but in the growth upon blood serum and potato forms are seen which are a very marked resemblance to some of the involution forms seen in the growths of ordinary saprophytes. Roux describes these involution forms—the pear-shaped, and the swollen forms. The author has found that these forms can be best obtained upon a blood serum which is not quite amber-color, but rather a little reddish, and when sterilized in steam after solidification at 70° Celsius, according to Hueppe, a dark serum is obtained. Upon such serum most beautiful involution forms appear after a week's sojourn in the thermostat. These marked involution forms will diminish if the bacillus is reconveyed back to the more white-colored serum sterilized by Hueppe's method. These involution forms are something more pronounced than those seen in ordinary preparations—the ordinary club-shapes; they are exaggerated and much increased in size; they stain by Loeffler blue (alkaline), and the author has been fortunate to obtain microphotos of some of these preparations, and presents them here. It will be seen that the process of involution might be traced in the specimen. The bacillus of Loeffler of normal size to that of the swollen form presents many variations. When the full involution form presents itself it is very transparent, club-shaped, and at its extremity is a small spot which stains more deeply than the rest of the bacillus. These involution forms are sometimes arranged in curious figures. Upon potato after a week these Loeffler bacilli in involution forms are much increased in size; the clubs are very irregular and not so beautiful as the blood-serum forms.

Animal Experiments.—A very large number of guinea-pigs were used by the author to verify results detailed in this paper. Every case in which the Loeffler or pseudo bacillus was obtained was tested by animal experiment to see whether the case was true diphtheria. This has become an important procedure, because it is the only means which we now know of absolutely proving our cases. Not only was each case given the benefit of animal inoculation, but it will be seen that a much larger number of animals were also inoculated to study peculiarities and strength of culture. It would therefore be taking too much space to detail each experiment, and only results will be given.

The author generally inoculated by means of bouillon cultures two days' old. At first, before he was acquainted with the work of Behring, the cultures of various ages were used, or a platinum loop of serum culture was carried underneath the skin. The results were lethal, but the length of illness of the animal varied largely from thirty-six hours to four to nine days. When serum cultures are sown upon agar, and a single colony again from such a plate is sown upon obliquely solidified alkaline agar, an absolutely pure culture is obtained. Such tubes should be taken out of the thermostat after forty-eight hours and kept in a dark, cool closet, as a mother tube to inoculate simple bouillon. Simple bouillon inoculated with such an agar tube after two days should be taken out of the thermostat. The author has in this way obtained bouillon cultures which were absolutely reliable, uniform, and would prove lethal to a guinea-pig of 350 to 400 grammes within forty-eight hours if only 0·1 c. c. was introduced under the skin; before such bouillons were used, the author made use of the platinum loop.

Symptoms in the guinea-pig after inoculation are a local swelling, of greater or lesser extent, which increases with the increase of symptoms. If the disease in the animal lasts long, the local lesion becomes more firm and hard; and, when the platinum loop has been used to introduce the pure serum culture, a dense patch, like necrotic tissue, takes the place of œdema. This, post mortem, looks very much like diphtheritic membrane, and can be separated into layers. If the bouillon of two days is used, the local lesion is an extended œdema, which, if it is intense, is also hæmorrhagic. The general symptoms vary. Many animals, if the serum culture is directly introduced in crude but pure form under the skin of the back, will live some days, and have a good appetite until twenty-four hours before death, when certain symptoms appear. If the bouillon is injected, the animal, after twenty-four hours, will crouch in a corner, take but little food, it will not avoid being handled, and in some cases marked dyspnœa and sopor are seen. Sometimes the animal has a subnormal temperature. As stated, these symptoms appear later if cultures of various ages are used, but, if the agar and bouillon are used as above described, a uniform result is obtained within forty-eight hours or less. In twenty-four hours the animals are in the midst of their illness. The post-mortem appearances include, in addition to the above œdema locally, as follows: In some cases the only gross changes in the internal organs include the gross enlargement of the spleen and the suprarenal capsules. In others the lungs are studded with broncho-pneumonia. In other cases the pleural cavity and even the peritoneal cavity will contain large quantities of serum, but no pleurisy or peritonitis beyond a few fibrinous threads. In other cases the œdema of the mediastinal tissue is added to the above. In others the suprarenal capsules are not only large, but deeply injected and in places hæmorrhagic.

Such are the changes found in the animals inoculated with my cases. The diphtheria bacilli can be readily cultivated only from the local œdema, and not from the internal organs or pleuritic fluid. In rare instances an animal injected with a bouillon culture not properly prepared, or of an age which may vary from days to a week or two, will go through the stages of immense œdema locally. This œdema may even become necrotic at one spot and break through; such animals may finally recover. But such cultures, if prepared again after the manner of Behring, will again prove lethal. Roux has attempted to account for these recoveries by saying that the bacillus loses its virulence, not as if it did this from being very virulent at first, but bacilli derived from certain cases have certain grades of virulence originally modified in the fauces of the patient. I doubt whether this will prove the true explanation. Two animals, weighing each about four hundred and fifty grammes, were injected with 0·7 c. c. of a bouillon culture, nine days old, of a very typical case of primary diphtheria. These animals developed local œdema, and were quite ill and recovered. Bouillon cultures from this same case, two days old and prepared from the same alkaline agar, proved fatal, previous to this experiment, to nine guinea-pigs in succession, and subsequently to other guinea-pigs, in doses of 0·1 c. c. There must have been present certain conditions of growth in the nine days' bouillon not to be found in the two days' bouillon. As is well known, after two days in the thermostat, not only do the cultures begin to become acid, but the destruction of bacilli proceeds apace with the formation of toxines. The weakening of the bacillary power is in proportion to the formation of the toxine. Behring used for toxine experiments cultures which had sojourned at least four months in the thermostat; so that it is possible to assume that, if the injection of a culture is performed at a time when the bacillary contents are weakened and the toxine formation not strong enough, not only will it be necessary to use a greater dosage to prove lethal to the animal, but it may occur, as above, that the animals recover. Especially must we assume such a condition of things if the identical mother culture (agar) furnishes control bouillon cultures of an invariable lethal strength, both before and after such accidents as detailed above. The experimental part of diphtheria work has been, I think, greatly systematized by Behring, though I have not seen elsewhere any prominent recognition of the above facts.

The Pseudo-bacillus of Hofman; its Clinical Significance; its Relation to the Real Bacillus of Loeffler.—I have been fortunate in obtaining pure cultures of the bacillus which corresponds exactly to that described by Hofman. The discovery of the pseudo-bacillus was a mere accidental occurrence. While investigating several cases of pseudo-membranous faucial disease Hofman isolated this bacillus, and, in the belief that it was the real bacillus, took it to Loeffler. These two then injected it into guinea-pigs and found that it was innocuous, as also a bacillus found by Loeffler himself among his own tubes. Hofman claimed, and justly, priority, but Loeffler not only supported this discovery, but assumed that in certain cases of diphtheria the real bacillus and pseudo-bacillus grew side by side, and at times so difficult was it to separate the two that in some old serum cultures the pseudo-bacillus so outnumbered in growth the real bacillus that, after a time, an originally virulent culture became innocent and devoid of lethal action. Since this time a relationship has been assumed between the real and pseudo bacillus, but it has never yet been actually proved. They simply look, stain, and grow exactly similar to the real bacillus, but nothing further than this has been established. Hofman, Loeffler, Roux, Escherich, Welch, and Abbott have all isolated this bacillus in certain forms of pseudo-membranous disease. But from the same culture on serum no worker has succeeded, I believe, in fully satisfying himself of the actual coexistence of the two micro-organisms at the same time, with the exception of the above work of Hofman and Loeffler. As stated, Roux has found, as he thought, certain bacilli from certain cases vary in degrees of virulence; but I think it is but just to say that the whole subject of relationship is still *sub judice*. The writer has made an attempt to study this question, and his results are given below.

CASES IN WHICH THE HOFMAN PSEUDO-BACILLUS WAS FOUND.

Case I.—Female child, aged six years and a half. Mother had two children. Five weeks ago a boy, aged five years, died with diphtheria; this child is sick since yesterday; tonsils are very much swollen and covered with a yellowish, streaky, shining, mucoid material; no distinct membrane.

Temperature, 102°. A day after this, tonsils still swollen; covered in places with yellowish shreds of mucus; here and there a sort of pseudo-whitish coating on the tonsil, but no membrane.

A day after, tonsils still swollen; a few yellowish shreds; no actual membrane; slight glandular swellings at the angle of the jaw.

After a week, recovery complete.

Bacterioscopic Result.—Pseudo-bacillus, not lethal to animals in large dosage.

Case II. *Pseudo-bacillus.*—Male, aged a year and a half, sick for two days with croupy cough and noisy breathing (stridulous); has had such an attack once before. Tonsils red, but not large, rather flat; *absolutely no membrane* to be seen; no enlarged glands at the angle of the jaw; general condition good. Temperature (axilla), 99°; next day improved; croupy cough still present; no membrane present.

Bacterioscopic Examination.—Pseudo-bacilli, not lethal in large repeated dosage to guinea-pigs.

Case III.—Male, aged four years, stout, well-built child, sick for one day with croupy cough; no noisy or croupy breathing; there has been fever; no vomiting.

Tonsils red, swollen, have a whitish smoky appearance on the surface; no membrane; no glandular enlargements at the angle of the jaw; temperature, 103°.

Bacterioscopic examination gives pseudo-bacilli, not lethal in large repeated dosage to guinea-pigs.

Case IV.—Male, aged four years, has been sick for one day with chills, sore throat, and fever.

Both tonsils are swollen; there are small and large yellow plugs in the follicles which fall apart and are friable when removed. Baby in the same family had a sore throat a week ago; now well. This boy has swollen glands on the left side at the angle of the jaw; temperature, 101°.

Bacterioscopic Examination.—Pseudo-bacilli, not lethal to guinea-pigs.

The clinical features of these cases are not distinctive. They resemble very much the cases cited in the first part of this paper, which were diphtheritic without membrane, as also those of an innocent nature. The croupy voice or cough; the rude, noisy breathing generally termed stridulous; the enlarged glands at the angle of the jaw or their absence—were features of these cases. In the first case there was that pultaceous substance very much like that found in some of my cases of diphtheria in the first part of this study, and in the last case there were follicular appearances as in simple follicular amygdalitis. I hesitate to draw any distinctive clinical pictures, and will be satisfied with simply pointing out the cases in which the pseudo-bacillus was found.

The bacillus which the author found in the above cases answers exactly to that described by Hofman and Escherich as the pseudo-bacillus. It is a non-motile organism, stains very well in Loeffler's alkaline blue, and also by Gram's method. It is shorter and somewhat plumper, but very slightly so, than the real bacillus of Loeffler. Upon serum it grows in the same form of gray or yellow-gray moist layer or round grayish colonies; upon potato it grows absolutely like the real bacillus. Upon gelatin, like the real bacillus, it does not grow below 20° Celsius. The growth in bouillon is generally cloudy, becoming more slowly acid in reaction than the real bacillus; but the cultures, whether in sugar or plain bouillon, clear after a time with an abundant deposit at the bottom of the tubes. The only difference found is upon agar, and here upon glycerin-agar the growth of the pseudo-bacillus becomes more luxuriant and spreads more than that of the real bacillus. Thus it is seen how difficult it would be with the simple microscopic tests and culture media to pass upon the pseudo-bacilli, for some of the real bacilli are plumper and shorter than others (Roux), and I have verified this diversity in size.

Colonies of the pseudo-bacillus, when sown in agar plates and kept in the thermostat, show after forty-eight hours, exactly as in the real bacillus, (*a*) superficial round or straw-colored colonies by transmitted and gray-white by reflected light; (*b*) deep oval colonies without prolongations; (*c*) deep round colonies without prolongations; (*d*) oval colonies with prolongations or extensions (*Ausbuchtungen*), as described by Fraenkel in the real bacillus. All of the above-mentioned forms of colonies show the same organism growing on media exactly alike.

Animals—only guinea-pigs—were injected with repeated doses (1 c. c. to 2 c. c.) of a bouillon culture two days old. Each case was tested with at least two animals; in one case many more were injected for other work with the pseudo-bacillus, but no local œdema was obtained and not the slightest disturbance of well-being of the animal was observed in any case.

Returning, I will say that unless the bacillus which is found in healthy and diseased states and is named the pseudo-bacillus grows exactly similar to the real bacillus, it should not be assumed as the pseudo. Else many bacilli existing in the mouth which resemble the diphtheria bacillus might be called the pseudo-bacillus, and thus great confusion will arise. For the present, only as above stated, when a bacillus shows the distinctive characters detailed without virulence to guinea-pigs, should it be named pseudo-bacillus.

The author has attempted to find in typical Loeffler diphtheria the pseudo-bacillus growing side by side with the real bacillus, but has failed. A serum culture from a typical diphtheria of the tonsils was sown upon glycerin-agar, and after forty-eight hours the colonies which grew in superficial layers and in the depth with the differences of shape detailed in the description of the Loeffler bacillus were inoculated upon agar tubes. Each separate culture thus obtained was examined; the bacilli had the same morphological characters. Six guinea-pigs were inoculated with these various colonies, but all the animals died within thirty-six hours. After such results the author had scarcely the courage to proceed in this line.

Does inoculation with the pseudo-bacillus of Hofman confer any degree of immunity against diphtheria upon the animals thus treated ?

It is a well-known fact that guinea-pigs which have recovered (Roux) or been cured (Behring) of diphtheria possess a certain degree of resistance against subsequent inoculations with diphtheria or its toxine. This resistance amounts to at present only a partial but not complete immunity. Diphtheria, therefore, has resisted all efforts in producing a complete immunity in the animals inoculated against any subsequent inoculations. A marked partial immunity, however, can be produced. This partial immunity owes its existence possibly to a great extent to the taking up into the organism that part of the products of diphtheria bacillus which has been shown by Fraenkel and Brieger to be the protective proteid. Whatever this is, such a resistance as above is not made apparent in any animals inoculated once or at intervals with large quantities of the pseudo-bacillus cultures isolated by the author.

Experiments.—1. (*a*) Guinea-pig, 225 grammes, injected with pseudo-bacillus bouillon culture subcutaneously; after three days reinjected with 0·75 c. c. of bacillus Loeffler culture in bouillon in same spot; died within forty-eight hours. Local hæmorrhagic œdema, enlarged lymphatics, spleen large, pleuritic cavities full of fluid, and few fibrin threads.

(*b*) Control animal, 225 grammes, injected at the same time with diphtheria bouillon culture two days old; died within forty-eight hours. Local hæmorrhagic œdema, large lymphatics, large hæmorrhagic suprarenal capsules, large spleen.

2. (*a*) Guinea-pig, 245 grammes, inoculated with 1 c. c. of a two-days' bouillon culture of pseudo-bacillus; after twenty-six days was reinoculated with 0·75 c. c. of two-days' bouillon culture of real Loeffler *Bacillus diphtheriæ;* died within thirty-six hours with local hæmorrhagic œdema, enlarged axillary lymphatic nodes, large spleen, early decomposition in subcutaneous tissue.

(*b*) Control animal, 300 grammes, injected at same time; died also.

3. (*a*) Guinea-pig, 300 grammes, injected with pseudo-culture as above; after forty days injected with 1 c. c. of true Loeffler bacillus bouillon; died in thirty-six hours with dyspnœa. Autopsy: local hæmorrhagic œdema, enlarged axillary lymphatics, fluid in pleural cavities, no pleuritis, large spleen.

(*b*) Control animal; died also within same time.

4. Guinea-pig, 460 grammes, injected with 1 c. c. pseudo-bacillus culture subcutaneously injected, after fifty-two days with 0·1 c. c. of real bacillus bouillon culture two days old; died within forty-eight hours. Local hæmorrhagic œdema, large spleen.

It will be seen from the above that 0·1 c. c. of true diphtheria was sufficient to prove lethal within a short time. No resistance against diphtheria poison could be proved from the above. If the bacillus isolated by the writer and assumed by him to be the pseudo-bacillus possessed any relation to the true diphtheria bacillus, it did not show this relation in the line of experiment followed above. Such relation may in the future be proved in other ways by some more fortunate worker.

The streptococcus, so often mentioned in the above work as having been found in connection with the true bacillus of Loeffler and also in cases in which this bacillus was not isolated, grew as follows:

Upon the blood serum which we used—the Loeffler blood serum—after twenty-four hours' sojourn in the thermostat, a finely beaded layer of chain cocci appeared; they were grayish or yellowish-white.

Upon agar the characteristic delicate streptococcus growth appeared upon obliquely solidified tubes, and upon gelatin, after four days, a finely beaded line appeared along the puncture without liquefaction. In bouillon, within twenty-four hours, a flocculent sediment was thrown down, at times coarse or fine, along the sides of the tube a finely granular deposit. It will thus be seen that it possessed, upon culture media, the characteristics presented by the *Streptococcus pyogenes.* Under the microscope, small or large chains, fine or coarse component cocci were found. No further studies were made other than isolation of these chain cocci.

Summary.—In our studies we have confirmed the fact that forms of diphtheria exist which clinically run their course without the manifestation of any visible membrane, and in which, at any time in the course of the disease, the Loeffler-Klebs bacillus can be isolated in the fauces, and is a source of danger to others.

It has also been shown that cases exist in which the local manifestation of diphtheria is not characteristic, and that such forms of diphtheria resemble very closely simple forms of angina.

Clinically it is impossible, from simple inspection, to sift the cases of non-characteristic true diphtheria from other forms of non-diphtheritic angina.

In the bacteriological examination of these cases, and with the subsequent animal tests, lies the only true diagnosis. Is it possible for us at present, in private practice, to examine each case as has been done in the foregoing studies? The author is not so sanguine upon this last point as Baginski, of Berlin, in his last article upon diphtheria. It is possible in the clinic and hospital to do such work, for the facilities are readily at hand, as also the conditions for study. In private practice, however, for the present we must insist upon the proper isolation of all doubtful cases of throat disease, and the time is ripe for pushing the doctrine of isolation to its farthest limits.

Note.—This work was conducted in the Carnegie Laboratory. The author desires to express here his sincere appreciation and obligation to Professor E. K. Dunham, of the Laboratory, for his many courtesies. The microphotos are the work of Professor Dunham, and were prepared from the author's specimens.

RESEARCHES UPON THE ÆTIOLOGY OF IDIOPATHIC EPILEPSY.

A PRELIMINARY COMMUNICATION.

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(Continued from page 211.)

SYNOPSES OF THE CLINICAL HISTORIES, TOGETHER WITH THE TABULATED RESULTS OBTAINED FROM ANALYSIS OF THE URINE.

In selecting the foregoing cases for study an effort was made to include only cases of idiopathic epilepsy. In three of the cases (IV, V, and VI) there is, however, reason to believe that the seizures may have been dependent on organic disease. In two of these three cases the seizures date from early childhood; in the other case they date from a severe injury to one side of the head.

Of the thirty-two cases of epilepsy, *grand mal* seizures were the distinctive features in twenty-nine. In the three remaining cases (XXIX, XXX, and XXXI) there were very frequent *petit mal* seizures. In one of these three cases there was no history of the occurrence of any *grand mal* paroxysms, but in the two others such paroxysms were said to occur at irregular and usually long intervals.

Eighteen of the thirty-one patients were inmates of the Hospital for Nervous Diseases, and we are indebted to Dr. E. D. Fisher and Dr. Frederick Peterson for their courtesy in placing these patients at our disposal for study.

Conclusions relating to the Excretion of Uric Acid in Epilepsy.—Is the epileptic paroxysm associated with any peculiarities in the excretion of uric acid? According to Haig, there is a great diminution in uric-acid excretion before the paroxysm, and an equally considerable increase in the uric acid excreted at the time of the paroxysm. Lool ing at those of our figures that relate to the elimination uric acid before the seizure, we find that the excretion h only in rare instances varied from the limits of health. Th is true both of the cases where the urine just before th paroxysm was examined, and of the instances where onl the urine for the twenty-four hours preceding the day the seizure was studied.[*] In a few instances the uric-aci content has been higher than is seen in health, but this h been in cases where high uric acids were frequent withou respect to the time of the seizures.[†] The general statemen may safely be made that there is nothing distinctive abo the uric-acid content of the urine just before a paroxysn The urines passed on the days of paroxysms (total twent four hours) and the urine passed *immediately* after seizur have also shown nothing distinctive. The latter are apt show a higher uric-acid ratio than the urines passed ju before seizures; very often, however, the ratio is one th belongs within the limits observed in health.

In general, it may be said that the urine passed after seizure is apt to have a higher uric-acid ratio than the urin before or about the time of the seizure (including that passe immediately after). The difficulty in getting the conditio in the collection of urine the same in different cases make numerical comparisons difficult. Of fifteen seizures whe a comparison may be made of the uric-acid content of th urines after seizures (either immediately or the day afte with the uric-acid content on the day of the seizures, th urines in nine cases showed an increase in the uric-acid co tent after the seizures, and in six of these cases the uric acid ratio was higher than 1 to 45.[‡] This tendency to high uric-acid ratio after paroxysms is to be regarded a consequence of conditions which determine the seizure or possibly of the seizure itself. The excess of uric aci that is observed in epilepsy can not reasonably be construe as the cause of seizures.[#] The foregoing remarks apply t

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[*] In studying the relation of uric-acid excretion to the epilept seizure we have to look both at the results obtained from the estima tion of uric acid in the twenty-four hours' urine immediately precedin in that of, and in that immediately following the seizure, and at the r sults obtained from the estimation of uric acid in divided portions the urine of the twenty-four hours in which the paroxysm has occurre The latter method is followed in some instances because there is th possibility that abnormities in separate portions may neutralize on another in the total twenty-four hours' urine and thus escape detectio For instance, the urine before the seizure might contain abnormally litt uric acid, and that at the time of or after the seizure a large excess but a mixture of the two portions might show no departure from th normal limits.

[†] One of the first things that one notices in looking over the table is that in nearly every case some of the twenty-four hours' urines sho deviations from the normal ratios (1:46 to 1:65). In sixteen of th twenty-one cases where uric acid was studied, the uric acid varies fro the limits of health, most of them showing a considerable proportio of urines in which the ratio to urea is distinctly high. The same case and some of the others show also a deviation of another character While many of the ratios are such as are met with in health among different individuals, the variations are certainly wider from day to da than those of individuals in health and on a reasonably constant diet.

[‡] These ratios are as follows: 50, 43, 38, 37, 31, 43, 48, 34, and 51.

[#] See also Herter and Smith. Observations on the Excretion of Uric Acid in Health and Disease. *N. Y. Medical Journal*, June 4, 1892.

Table showing the Excretion of Uric Acid and Urea and of the Sulphates and Indigo-Blue.

CASE AND DATE.	Volume.	Specific gravity.	Urea.	Uric acid.	Ratio of uric acid and urea.	Preformed sulphates.	Combined sulphates.	Ratio of preformed and combined sulphates.	Ratio of total sulphates and urea.	Indigo-blue.	REMARKS.
CASE I.	C. c.		Grammes.	Grammes.		Grammes.	Grammes.			Grammes.	
October 26, 1891....	2,170	1·013½	21·49	0·590	36·4	.....	.....	....	....	0·0411	
" 28...... ..	1,780	1·015	22·59	0·520	43·4	.....	.....	....	....	......	
" 30..........	1,230	1·017½	19·51	(Lost.)	....	.....	.....	....	....	0·0458	
November 2.........	1,580	1·015	19·64	0·422	46·5	.....	.....	....	....	......	*Grand mal* seizure night, November 2
" 4.........	1,650	1·011½	19·98	.....	....	.....	.....	....	....	......	
" 6.........	1,500	1·019	28·70	0·666	43·1	.....	.....	....	....	......	Begins use of highly nitrogenous food.
" 9.........	2,100	1·014	29·07	0·643	45·2	.....	.....	....	....	......	
" 11.........	1,320	1·012½	19·79	0·375	52·8	.....	.....	....	....	......	
" 13.........	1,650	1·015½	29·35	0·553	53·0	.....	.....	....	....	......	
" 19.........	1,425	1·023	37·26	(Lost.)	....	.....	.....	....	....	0·0544	
" 20.........	1,420	1·023	39·73	0·637	63·9	.....	.....	....	....	0·0552	Seizure at 3 A. M.
" 21.........	1,525	1·020½	41·20	0·534	77·1	.....	.....	....	....	0·0615	
" 22..... ...	1,690	1·020½	39·16	0·358	109·3	.....	.....	....	....	0·0824	
" 23.........	1,555	1·022	38·12	0·686	55·5	.....	.....	....	....	0·0636	
" 24.........	1,750	1·020	41·39	0·749	55·2	.....	.....	....	....	0·0516	
" 25.........	1,535?	1·019½	36·60	0·648	56·4	.....	.....	....	....	0·0517	
December 6.........	2,190	1·013	27·79	0·627	44·3	2·196	0·167	13·0	11·6	......	
" 7.........	2,300?	1·014½	29·19	0·554	52·7	.....	.....	....	....	......	
" 8.........	1,860	1 016	24·14	0·379	63·7	.....	.....	....	....	......	From December 1–8, 15 grammes sodium salicylate t. i. d.
" 9.........	2,120	1·014	23·03	0·367	66·3	1·745	0·237	7·3	11·6	0·009	
" 10.........	1,550	1·017½	24 29	0·462	52·5	.....	.....	....	....	......	
" 11.........	1,560	1·021	26·54	0·513	51·7	.....	.....	....	....	......	
" 27.........	1,380	1·017½	25·08	0·400	62·7	1·740	0·285	6·1	12·2	0·0392	
" 28.	2,115	1·014	23·15	0·596	38·8	1·695	0·225	7·3	12·4	0·0171	Blurred vision to-day.
" 29.........	1,945	1·016½	24·90	0·486	51·2	1·915	0·235	8·1	11·1	0·0318	
" 30.........	1,315	1·017	22·36	0·379	59·2	1·780	0·087	20·4	11·9	0·0163	
" 31.........	1,505	1·015½	26·47	0·408	64·9	1·964	0·173	11·3	12·4	0·0312	
January 1, 1892.....	1,610	1·019½	31·15	0·557	55·9	2·077	0·262	7·9	13·3	0·0573	Ate and smoked to excess to-day.
" 2, I.........	845	1·017	14·78	0·258	57·2	.....	.....	....	....	......	Mild seizure at 7.30 A. M., January 2.
" 2, II.........	435?	1·016½	5·65	0·096	58·8	.....	.....	....	....	......	
" 2, III.........	735	1·009½	5·24	0·103	50·9	.....	.....	....	....	......	
" 2 (total).....	2,015	.....	25·68	0·457	56·1	2·045	0·318	6·4	....	0·0453	
" 3.....	1,175	1·019	21·47	0·467	46·0	1·698	0·231	7·3	....	0·032	
" 4..........	1,925	1·015	25·39	0·429	59·2	1·505	0·383	3·9	....	0·039	
" 5..........	1,400	1·020	21·34	0·426	50·1	1·765	0·256	6·9	....	0·0379	
" 21..........	1,460	1·015	26·11	0·500	52·2	1·437	0·533	2·7	....	0·569	
" 23, II.........	705	1·015	5·44	0·172	31·6	.....	.....	....	....	......	
" 23, III..	335	1·012	8·64	0·143	60·4	.....	.....	....	....	......	
" 23, II, III....	1,040	.....	14·08	0·315	44·7	0·772	0·124	4·4	....	......	
" 24....	1,185	1·013½	15·63	0·586	26·6	1·327	0·174	7·6	....	0·0207	
" 31..........	1,540	1·020½	29·87	0·764	39·1	2·428	0·331	7·3	....	0·0564	
February 1..........	1,270	1·017	19·68	0·441	44·6	1·300	0·208	65·0	....	......	
" 2..........	1,390	1·016½	20·85	0·401	50·0	1·638	0·223	7·0	....	......	
" 3, I.........	1,070	1·021½	19·58	0·426	45·9	.....	.... .	....	....	......	
" 3, II.........	320	1·016½	4·60	0·085	53·8	.....	.....	....	....	......	
" 3, III.......	520	1·014½	6·39	0·169	37·8	.....	.....	....	....	......	
" 3 (total)....	1,910	.....	30·58	0·680	44·9	3·415	0·373	9·1	....	0·0695	
" 4..........	1,090	1·020	23·87	0·563	42·4	2·034	0·194	10·3	....	......	
" 5..........	1,455	1·020	26·33	0·604	43·6	2·175	0·216	10·0	....	......	
" 8, 9.....	1,420 1,520	1·017	.....	.....	....	3·597	0·507	7·0	....	0·0697	
" 10..........	1,365	1·020½	.....	.....	....	1·928	0·275	7·0	....	......	
March 10, I.........	825	1·017	14·93	0·212	70·4	.....	.....	....	....	......	
" 10, II.........	780	1·019½	12·55	0·481	26·1	.....	.....	....	....	......	
" 10 (total).....	1,605	.....	27·49	0·693	39·6	.....	.....	....	....	......	
" 31..........	1,820	1·018	34·94	0·545	61·1	4·022	0·237	17·0	....	......	Milk diet commenc'd.
April 27..........	1,635	1·018	33·49	0·561	59·7	2·77	0·232	11·0	....	......	
" 27, 28, I......	850	1·010	8·92	0·136	65·6	0·717	0·052	13·8	....	......	
" 27, 28, II......	530	1·017	7·82	0·110	71·1	0·493	0·046	10·7	....	......	One seizure, 6.45 A. M.
" 27, 28, III.....	610	1·012	7·61	0·176	43·2	0·521	0·050	10·4	....	......	
" 27, 28, I, II, III.	1,990	.....	24·36	0·422	57·7	1·730	0·149	11·6	....	......	
" 28, 29........	1,670	1·015	30·39	0·518	58·6	2·439	0·226	10·8	....	......	
May 6......... ...	1,855	1·015	30·48	0·528	57·7	2·306	0·217	10·6	....	Almost negative.	
" 9............	1,715	1·012	24·07	0·419	57 4	.....	.....	....	....	Strong.	
" 10, I...........	1,520	1·012	20·07	0·364	55·1	.....	.....	....	....	Strong.	
" 10, II..........	225	1·015	3·32	0·054	61·0	.....	.....	....	....	......	Seizure at 7.45 A. M.
" 10, III.	705	1·011	7·40	0·223	33·2	.....	.....	....	....	......	Ate asparagus on night of May 9.
" 10, I, II, III.....	2,450	.. ..	30·80	0·679	45·2	.....	.....	....	....	......	
" 11.............	1,250	1·013	19·24	0·402	47·8	.....	.....	....	....	......	
" 14, 15,.........	1,980	1·011	26·56	0·464	57·2	.....	.....	....	....	......	

Table showing the Excretion of Uric Acid and Urea and of the Sulphates and Indigo-Blue (Continued).

CASE AND DATE.	Volume.	Specific gravity.	Urea.	Uric acid.	Ratio of uric acid and urea.	Preformed sulphates.	Combined sulphates.	Ratio of preformed and combined sulphates.	Indigo-blue.	REMARKS.
	C. c.		Grammes.	Grammes.		Grammes.	Grammes.		Grammes.	
May 15, I.	1,080	1·011	11·90	0·203	58·6	.....	.....	....	......	
" 15, II	570	1·015	8·18	0·143	57·2	.....	.....	....	......	
" 15, III.	320	1·021	6·98	0·215	32·5	.....	.....	....	......	
" 15, I, II, III.	1,970	.....	27·07	0·561	48·2	.....	.....	....	......	
" 16, 17.	700	1·018	16·38	0·340	48·1	....	.....	....	......	Seizure at 6.30 A. M., May 16.
June 4.	1,440	1·010	15·64	.....	....	1·178	0·254	4·6	Medium strong.	
CASE II.										
October 8, 1891.	920	1·014	9·377	0·339	23·4	.....	.....	....	......	
" 20.	1,340	1·011	13·780	0·440	31·3	.....	.....	....	0·0095	
" 20.	196	1·019	......	0·135	....	.....	.....	....	......	
" 27.	1,160	1·016	16·955	0·529	32·0	.....	.....	....	Traces.	
November 2.	1,200	1·019½	22·155	0·635	34·9	.....	.....	....	......	
December 29.	590	1·021½	20·529	0·639	32·1	.....	.....	....	Traces only.	
January 5, 1892	530	1·019	9·064	0·380	23·8	0·525	0·162	3·2	.....	One seizure.
" 12.	1,005	1·020	24·360	0·532	45·8	1·387	0·233	4·9	0·0113	
" 15.	340	1·029½	12·295	0·321	38·3	0·839	0·108	7·8	.....	24 hours following seizure.
" 18.	800	1·025½	23·142	0·565	40·9	1·381	0·206	6·7	Traces only.	
" 25.	995	1·012½	12·390	0·375	32·9	0·679	0·191	3·5	0·0136	
" 28.	2,095	1·014½	31·120	0·806	38·6	2·019	0·393	5·1	0·0158	Two seizures on June 30.
February 15.	765	1·023½	......	.....	....	1·312	0·136	8·6	......	One seizure.
March 5.	835	1·026	......	.....	....	2·263	0·273	8·2	......	
" 19.	1,910	1·018	......	.....	....	2·086	0·221	6·5	......	
CASE III.										
November 12, 1891.	745	1·022	16·69	.....	....	....	.....	....	......	
January 29, 1892	705	1·009	6·95	0·228	30·5	0·330	0·079	4·1	......	
March 30.	825	1·022	......	.....	....	1·270	0·185	6·8	......	
CASE IV.										
February 4, 1892.	900	1·021	24·12	0·386	62·4	.....	0·229	....	......	
" 4.	820	1·016	19·27	0·329	58·5	.....	.....	....	......	After five *grand mal* seizures.
" 5.	815	1·023	26·97	0·456	59·1	.....	.....	....	......	Two seizures.
" 5.	1,635	.....	46·24	0·785	58·9	.....	0·212	....	......	
" 6.	1,195	1·014	16·01	0·255	62·8	.....	.....	....	......	One seizure.
" 6, 7	990	1·018	19·00	0·231	82·2	.....	.....	....	......	
" 6, 7	2,185	.....	35·02	0·486	72·0	1·683	0·139	12·1	......	
" 9, 10	1,020	1·026	34·37	0·442	77·7	.....	.....	....	......	
" 15.	1,013	0·985	......	.....	....	1·478	0·088	15·8	......	
CASE V.										
February 9, 10, 1892.	690	1·024	17·319	0·451	38·4	9·085	0·868	10·4	Traces only.	12 hours following seizure.
" 10, 11	400	1·026	14·360	0·388	37·0					
" 11, 12	635	1·025	19·749	0·474	41·6					
" 14, 15	590	1·027	26·373	0·419	62·9	3·757	0·422	8·9	Traces only.	Seizure between I and II.
" 15, I.	330	1·029	15·972	0·273	50·5					
" 15, 16, II.	260	1·025	10·140	0·176	56·6					
" 15, 16, I, II.	590	.....	26·112	0·449	58·1					
" 16, 17	520	1·027	22·360	0·476	47·0					
" 20, 21	770	1·023	19·481	0·446	43·6	5·729	0·431	13·3	0·0080	
" 21, 22	660	1·023	18·216	0·448	40·6					
" 22, 23	630	1·025	20·160	0·648	31·1					
CASE VI.										
February, 1892.	785	1·019	25·512	0·439	58·1	.....	.....	....	......	
I.	265	1·019	9·805	0·135	72·6	.....	.....	....	......	
II	165	1·028	6·501	0·150	43·3	3·493	0·436	8·0	Traces only.	
I, II	430	.....	16·306	0·285	57·1	.....	.....	...	......	Seizure between I and II.
....	390	1·027	16·497	0·304	54·2	.....	.....	....	......	
February 29.	925	1·025	27·935	0·768	36·3	.....	.....	....	......	
March 1, 2, I.	375	1·012	7·65	0·144	53·1	.....	.....	....	......	
" 2, II.	310	1·023	10·57	0·220	48·0	5·590	0·798	7·0	0·0018	Seizure between I and II.
" 2, I, II.	685	.....	18·22	0·364	50·0	.....	.....	....	......	
" 2, 3.	835	1·025	26·14	0·631	41·4	.....	.....	....	......	
CASE VII.										
February 15, 1892.	875	1·020	19·16	0·348	55·0	.....	.....	....	......	
" 16.	1,425	1·023	35·48	0·769	46·1	5·278	0·524	10·0	......	One *grand mal* seizure.
" 17.	545	1·027	19·78	0·578	34·2	.....	.....	....	......	
" 26.	2,070	1·022	47·40	1·002	47.3	3·920	0·310	12·6	......	
" 26.	2,115	1·014	36·37	0·852	42·7	3·059	0·281	10·8	......	One *grand mal* seizure.
" 26.	2,080	1·018	38·68	0·733	52·7	2·938	0·383	7·7	......	
CASE VIII.										
February 22, 1892.	660	1·023	17·88	0·443	40·3	2·470	0·311	7·9	......	One *grand mal* seizure.
" 23.	985	1·013	18·71	0·570	32·8					

Table showing the Excretion of Uric Acid and Urea and of the Sulphates and Indigo-Blue (Continued).

CASE AND DATE.	Volume.	Specific gravity.	Urea.	Uric acid.	Ratio of uric acid and urea.	Preformed sulphates.	Combined sulphates	Ratio of preformed and combined sulphates	Indigo-blue.	REMARKS.
CASE IX.	C. c.		Grammes.	Grammes.		Grammes.	Grammes.		Grammes	
March 13, 1892......	900	1·015	10·53	0·206	51·1	1·714	0·332	5·1	....	Sample of 24 hours' urine.
" 14...........	950	1·015	11·30	0·249	45·4					
May 24, 25..........	1,245	1·015	16·710	.....	....	1·415	0·260	5·4	....	
" 25, 26..........	840	1·024	17·170	.....	....	1·567	0·198	7·9	....	
" 26, 27..........	1,360	1·020	22·843	.....	....	1·763	0·375	4·7	....	
CASE X.										
March 9, 1892.......	1,160	1·018	25·40	0·504	50·4	2·375	0·241	9·8	....	One *grand mal* seizure at night.
" 10............	1,975	1·010	22·31	0·311	71·7	1·652	0·231	7·1	....	
" 11............	835	1·025	22·54	0·392	57·5	1·984	0·211	9·3	....	
" 12............	1,305	1·009	15·00	0·220	68·1	.....	.....	....	....	
" 13............	825	1·022	23·01	0·494	46·6	4·614	0·617	7·5	....	
" 14............	1,040	1·014	17·78	0·337	52·7					
" 15............	1,140	1·013	18·01	0·328	54·9					
" 16............	755	1·022	19·63	0·281	69·8	2·893	0·432	6·7	....	One *grand mal* seizure.
" 17............	1,700	1·010	20·40	0·399	51·1					
May 19, 20..........	1,150	1·019	28·61	.....	....	3·711	0·242	15·3	....	One seizure; sod. sal., gr. x, t.i.d.
" 20, 21..........	1,470	1·010	17·86	.....	....	1·615	0·183	8·8	....	" "
" 21, 22..........	1,250	1·020	31·50	.....	....	2·962	0·306	9·6	....	" "
" 22, 23..........	1,090	1·015	22·45	.....	....	1·703	0·231	7·4	....	" "
" 23, 24..........	1,075	1·020	26·24	.....	....	1·706	0·217	7·8	....	Two seizures.
" 24, 25..........	1,610	1·008	18·61	.....	....	1·330	0·248	5·3	....	Sod. sal., gr. x, t. i. d.
" 25, 26..........	1,455	1·010	24·63	.....	....	1·847	0·251	7·3	....	
CASE XI.										
March 10, 1892......	1,225	1·012	15·80	0·387	40·8	1·134	0·265	4·2	....	
" 12...........	1,525	1·014	22·41	0·482	46·5	2·537	0·508	5·0	....	
" 13...........	920	1·014	14·44	0·292	49·4					
" 14...........	1,960	1·014	25·48	0·625	40·7	1·850	0·363	5·1	....	One *grand mal* seizure.
" 15...........	910	1·018	18·38	0·353	52·0	3·227	0·549	5·8	....	One *grand mal* seizure.
" 16...........	840	1·019	22·09	0·370	59·7					
" 17....... ...	1,220	1·011	15·25	0·307	49·6	1·063	0·188	5·6	....	One *grand mal* seizure.
CASE XII.										
March 22, 23, 1892...	990	1·013	15·93	0·192	83·0	3·344	0·536	6·2	....	
" 23, 24........	780	1·013	14·74	0·230	64·0					
" 24, 25........	585	1·019	16·16	0·228	70·8					
" 26, 27........	580	1·017	16·41	0·209	78·5	1·090	0·165	6·6	....	
" 28, 29........	1,550	1·015	27·43	0·273	100·4	2·143	0·251	8·3	....	One *grand mal* paroxysm.
CASE XIII.										
March 22, 23, 1892...	480	1·020	4·88	0·166	25·4	1·699	0·152	11·2	....	Eight seizures.
" 23, 24........	210	1·015	1·688	0·072	23·2	.....	.....	....	....	Partial sample for 24 hours; nine seizures.
" 28, 29........	770	1·010	7·909	0·116	68·1	1·559	0·179	8·7	....	Twelve seizures.
" 30, 31........	910	1·008	10·62	0·212	50·0					Ten seizures.
CASE XIV.										
March 29, 30, 1892...	1,800	1·009	20·34	0·263	77·3	2·411	0·516	4·7	....	Six seizures.
" 30, 31........	2,035	1·007	14·24	0·394	36·1					Nine seizures.
" 31 to April 7..	1,900	1·011	26·03	0·550	47·3	4·364	0·505	8·6	....	Twelve seizures.
April 1, 2...........	1,720	1·015	31·30	0·495	65·0					Seven seizures.
May 19, 20..........	1,560	1·013	19·92	.....	....	1·500	0·243	6·2	....	Four seiz.; sod. sal., gr. xv, t.i.d.
" 20, 21..........	2,000	1·012	25·95	.....	....	2·203	0·233	9·4	....	Three " " "
" 21, 22..........	1,460	1·012	25·06	.....	....	1·904	0·219	8·7	....	Four " " "
" 22, 23..........	785	1·014	15·22	.....	....	1·060	0·144	7·3	....	Three " " "
" 23, 24..........	1,555	1·009	19·72	.....	...	1·572	0·140	11·2	....	Three " " "
" 25, 26..........	1,530	1·012	25·69	.....	....	2·008	0·293	6·8	....	Six " " "
June 2, 3	1,870	1·009	22·82	.....	....	1·746	0·343	5·1	....	Sod. bicar., gr. xx, t.i.d.
" 3, 4...........	1,830	1·007	8·54	.....	....	0·648	0·272	2·4	....	Three " " "
" 4, 5...........	1,845	1·008	9·95	.....	....	0·866	0·237	3·6	....	" "
" 5, 6...........	1,840	1·011	17·05	.....	....	1·097	0·333	3·3	....	Three " " "
" 6, 7...........	1,675	1·007	15·68	.....	....	0·895	0·293	3·0	....	Four " " "
" 7, 8...........	1,770	1·005	11·91	.....	....	0·721	0·241	3·0	....	Two " " "
" 8, 9...........	1,060	1·003	5·20	.....	....	0·284	0·106	2·7	....	Three " " "
" 10, 11..........	1,475	1·009	12·62	.....	....	0·895	0·303	2·9	....	Three seizures.
" 11, 12...	1,980	1·015	11·88	.....	....	0·873	0·205	4·2	....	Four seizures.
" 12, 13..........	1,780	1·008	20·71	.....	....	1·458	0·310	4·7	....	Three seizures.
CASE XV.										
April 2–4, 1892......	3,825	1·002	12·34	.....	....	1·024	0·147	7·0	....	
" 4, 5...........	1,960	1·004	11·97	0·328	36·4	2·253	0·386	5·8	....	One seizure.
" 5, 6...........	2,065	1·007	16·89	0·374	45·1					

Table showing the Excretion of Uric Acid and Urea and of the Sulphates and Indigo-Blue (Continued).

CASE AND DATE.	Volume.	Specific gravity.	Urea.	Uric acid.	Ratio of uric acid and urea.	Preformed sulphates.	Combined sulphates.	Ratio of preformed and combined sulphates.	Indigo-blue.	REMARKS.
CASE XVI.	C. c.		Grammes.	Grammes.		Grammes.	Grammes.		Grammes.	
April 16, 17	1,880	1·009	15·98	0·238	67·1	1·206	0·169	7·1	....	
" 17, 18	1,380	1·009	14·90	0·298	50·0	1·065	0·161	6·1	....	One *grand mal* seizure.
" 18, 19	1,355	1·012	16·66	0·305	54·6	1·232	0·152	8·1	....	Two *grand mal* seizures.
" 23, 24	1,885	1·006	15·32	0·234	65·5	1·160	0·130	8·9	....	" " "
" 24, 25	1,150	1·008	8·56	0·121	70·7	.....	.....	....	....	
May 19, 20	1,675	1·009	13·83	.....	....	1·001	0·173	5·7	....	One seiz.; sod. bicarb., gr. x, t.i.d.
" 20, 21	2,070	1·006	11·98	.....	....	0·950	0·190	5·0	....	" "
" 21, 22	1,905	1·005	10·10	.....	....	0·637	0·185	3·4	....	Three " " "
" 22, 23	1,820	1·007	8·76	.....	....	0·515	0·300	1·7	....	Two " " "
" 23, 24	1,935	1·004	5·49	.....	....	0·358	0·116	3·1	....	Two " " "
" 27, 28	1,740	1·005	8·89	.....	....	0·631	0·192	3·3	....	" gr. xx, t.i.d.
" 28, 29	905	1·007	5·35	.....	....	0·387	0·095	4·0	....	" "
" 29, 30	1,100	1·007	7·36	.....	....	0·415	0·140	2·9	....	" "
" 30, 31	1,045	1·005	5·51	.....	....	0·392	0·070	5·6	....	" "
" 31 to June 1	1,775	1·005	9·71	.....	....	0·551	0·179	3·0	....	Two seiz.; " "
CASE XVII.										
April 22, 23	1,430	1·012	15·73	0·315	49·9	1·354	0·153	8·8	....	
" 28, 29	1,355	1·012	23·81	.....	....	1·936	0·109	17·7	....	
" 29, 30	1,455	1·013	26·63	0·402	66·2	2·262	0·170	13·3	....	One seizure.
" 30 to May 1	990	1·013	14·41	0·164	87·8	1·349	0·143	9·4	....	
CASE XVIII.										
May 6, 7	1,505	1·012	22·85	0·349	65·5	1·519	0·221	6·7	....	
" 8, 9	1,965	1·006	18·69	0·398	47·0	1·316	0·139	9·4	...	One seizure.
" 9, 10	1,400	1·005	13·10	.....	....	0·924	0·198	4·6	....	One seizure, May 10, 11.
CASE XIX.										
May 8, 9	1,710	1·008	17·78	.....	....	1·296	0·151	8·5	....	
" 9, 10	1,835	1·011	21·56	.....	....	1·761	0·208	8·4	....	Two seizures.
" 10, 11	1,815	1·007	18·02	.....	....	1·535	0·162	9·4	....	
CASE XX.										
May 12, 13	1,515	1·011	32·81	.....	....	1·961	0·148	13·2	....	One seizure.
" 13, 14	2,025	1·010	28·44	.....	....	1·599	0·165	9·6	....	
" 15, 16	1,485	1·015	.....	.....	....	2·494	0·272	9·1	....	
CASE XXI.										
May 14, 15	1,155	1·013	24·08	.....	....	1·507	0·254	5·9	....	
" 15, 16	940	1·015	19·64	.....	....	1·351	0·240	5·6	....	One seizure.
" 16, 17	1,285	1·014	20·35	.....	....	1·806	0·227	7·9	....	
CASE XXII.										
May 17, 18	1,480	1·008	9·64	.....	....	0 812	0·082	9·9	....	
" 18, 19	1,730	1·006	8·61	.....	....	0·649	0·109	5·9	....	One slight seizure.
" 19, 20	1,800	1·005	10·86	.....	....	0·777	0·108	6·5	....	
CASE XXIII.										
May 20, 21	1,780	1·009	15·90	.....	....	1·350	0·204	6·6	....	
" 21, 22	1,350	1·012	14·32	.....	....	1·135	0·170	6·6	....	One seizure.
" 22, 23	1,050	1·013	13·26	.....	....	0·993	0·146	6·8	....	
CASE XXIV.										
May 27, 28	1,620	1·012	19·88	.....	....	1·723	0·262	6·6	....	
" 28, 29	1,735	1·013	22·85	.....	....	2·018	0·460	4·4	....	One severe seizure.
" 29, 30	1,235	1·013	25·05	.....	....	1·884	0·165	11·4	....	
CASE XXV.										
May 30, 31	1,520	1·014	27·25	.....	....	2·102	0·224	9·3	....	One seizure.
May 31 to June 1	1,440	1·013	21·48	.....	....	1·666	0·199	8·3	....	
June 2, 3	1,045	1·016	25·20	.....	....	1·955	0·215	9·0	....	Sod. bicarb., gr. xx, t. i. d.
" 3, 4	1,595	1·011	17·52	.....	....	1·573	0·213	7·4	....	" "
" 4, 5	1,620	1·013	19·44	.....	....	1·640	0·204	8·0	....	" "
" 5, 6	1,725	1·016	28·67	.....	....	2·442	0·248	9·8	....	" "
" 6, 7	1,110	1·018	23·68	.....	....	1·930	0·231	8·3	....	" "
" 7, 8	1,855	1·009	20·68	.....	....	1·678	0·220	7·6	....	One seizure.
" 8, 9	2,030	1·003	31·87	.....	....	2·443	0·275	8·9	....	" "
" 10, 11	1,450	1·010	16·37	.....	....	1·516	0·137	11·0	....	
" 11, 12	835	1·022	20·67	.....	....	1·955	0 212	9·2	....	
" 12, 13	580	1·015	9·88	.....	....	0·844	0·096	8·8	....	
" 13, 14	565	1·024	18·80	.....	....	1·639	0·163	10·5	....	
" 14, 15	1,080	1·020	25·40	.....	....	2·077	0·201	10·3	....	
CASE XXVI.										
June 1, 2	520	1·030	14·45	0 422	34·2	.....	.....	....	....	
" 2, 3	510	1·028	13·87	.....	....	1 030	0 147	7·0	....	
" 3, 4	620	1·025	16·54	0·462	35·8	1·258	0·167	7·5	....	

Table showing the Excretion of Uric Acid and Urea and of the Sulphates and Indigo-Blue (Continued).

Case and Date.	Volume.	Specific gravity.	Urea.	Uric acid.	Ratio of uric acid and urea.	Preformed sulphates.	Ethereal sulphates.	Ratio of sulphates.	Indigo-blue.	Remarks.
Case XXVII.	C. c.		Grammes.	Grammes.		Grammes.	Grammes.		Grammes.	
June 2, 3	1,160	1·016	20·79	.....	....	1·473	0·344	4·2	......	One seizure.
" 3, 4	1,550	1·009	14·01	.....	....	1·013	0·275	3·6	......	
" 6, 7	990	1·007	17·74	.....	....	1 490	0·280	5·3	......	One seizure.
" 7, 8	1,460	1·011	18·86	.....	....	1·531	0·303	5·0	......	
" 8, 9	1,880	1·008	13·78	.....	....	1·230	0·226	5·4	......	
" 9, 10	1,845	1·009	20·43	.....	....	1·434	0·334	4·3	......	One seizure.
" 10, 11	1,865	1·007	16·55	.....	....	1·026	0·361	2·8	......	
" 13, 14	395	1·023	14·58	.....	....	1·246	0·221	5·6	......	
" 14, 15	885	1·017	21·53	.....	....	1·880	0·306	6·1	......	
Case XXVIII.										
June 2, 3	1,775	1·010	12·86	.....	....	1·003	0·237	4·2	......	
" 3, 4	1,770	1·008	11·40	.....	....	0·996	0·192	5·0	......	One *grand mal* seizure to-day.
" 4, 5	1,760	1·011	16·28	.....	....	1·523	0·258	5·9	......	
Case XXIX.							Combined sulphates.			
December 29, 1891	850	1·017	19·60	0·594	33·0	.....	.....	....	0·0044	Several *petit mal* seizures weekly.
January 11, 1892	1,290	1·021	26·60	0·494	53·8	.....	0·164	....	0·0164	
" 17	1,255	1·019	34·83	0·577	60·3	2·876	0·200	13·7	Traces only.	
" 20	155	1·017	3·34	.....	....	.....	.....	....	......	
" 20	1,875	1·014	30·42	0·435	70·0	.....	.....	....	......	
" 20	2,030	.....	35·96	.....	....	2·456	0·234	10·5	Traces only.	
" 27	1,260	1·012	14·28	0·352	40·5	1·207	0·128	9·4	......	
" 28	134	1·019	2·69	0·048	56·2	.....	.....	....	......	
" 28	1,210	1·012	17·97	0·347	52·1	.....	.....	....	......	
" 28	1,344	.....	20·67	0·395	52·3	1·632	0·207	7·9	Traces only.	
" 29	1,520	1·012	19·16	0·386	49·1	1·738	0·221	7·8	"	
" 30	910	1·012	14·58	0·238	61·2	.....	.....	....	......	
" 30	460	1·018	8·58	0·217	39·5	.....	.....	....	......	
" 30	1,370	.....	23·17	0·455	50·9	2·081	0·184	11·3	Traces only.	
" 31	1,015	1·017	20·73	0·447	46·3	.....	.....	....	......	
" 31	400	1·013	5·35	0·123	43·5	.....	.....	....	......	
" 31	1,415	.....	26·08	0·570	45·7	2·327	0·209	11·1	Traces only.	
February 2	2,040	1·014	29·17	0·706	41·3	2·643	0·261	10·1	"	
" 3	1,750	1·013	20·47	0·489	41·9	1·813	0·253	7·1	"	
" 10	1,345	1·013	20·71	0·460	45·0	2·202	0·109	20·2	......	
April 9	805	1·018	18·99	0·346	54·9	1·701	0·093	17·3	......	
Case XXX.										
March 3, 1892	600	1·020	.....	.....	....	.....	.....	....	......	
" 4	830	1·020	15·53	0·478	32·5	.....	.....	....	......	
" 4, 5	910	1·023	20·01	0·544	36·8	4·867	0·238	20·4	......	
" 5, 6	890	1·023	20·64	0·526	39·2					
" 6, 7	775	1·025	17·96	0·415	43·2					
" 7, 8	830	1·023	16·46	0·419	39·2	.....	.....	....	......	
" 9, 10	950	1·012	11·93	0·194	61·4	.....	.....	....	......	
" 10, 11	945	1·012	14·97	0·226	66·1	.....	.....	....	......	
" 11, 12	960	1·014	17·30	0·226	76·5	2·751	0·110	25·0	......	
" 12, 13	990	1·012	17·50	0·204	85·8					
May 4	1,680	1·021	.....	.....	....	.....	.....	....	......	
" 5, 6	950	1·015	.....	.....	....	.....	.....	....	......	
Case XXXI.										
March 9, 1892	855	1·031	24·54	0·593	41·3	2·208	0·137	16·1	......	
April 25	935	1·031	34·59	0·521	66·4	2·565	0·148	17·3	......	

cases of *grand mal.* In *petit mal* cases we have observed a continuously high uric-acid excretion which appeared to be related in some way to the cause of the seizures. It was found in two out of three *petit mal* cases that when the excretion of uric acid was reduced to normal by the use of a milk diet, the seizures were greatly reduced in frequency. This effect upon the seizures of reducing the uric-acid excretion has been of considerable duration in these cases and may prove to be permanent.

(*To be concluded.*)

RETINOSCOPY

AS A MEANS OF ESTIMATING ASTIGMATISM.*

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Errors of refraction and derangement of the ocular muscles are now so generally recognized as causes of severe headaches, dizziness, nausea, and very many remote symptoms, that it is a common occurrence for the specialist to have cases referred to him to investigate the state of refraction and test the ocular muscles, suspecting an abnormity in either or both as a cause for some reflex nervous disturbance.

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* Read before the Hospital Graduates' Club, May 24, 1892.

In fact, the general public are so well acquainted with the relation between eye-strain and headache that they frequently apply for an examination of their eyes, seeking a cause and remedy for severe headaches which nothing seems to relieve.

One of the most common forms of ametropia, and one which I think is the most important factor in producing the varied groups of symptoms under the head of "asthenopia," is "astigmatism." The severity of the symptoms resulting from this ocular defect is by no means in proportion to the degree of error, depending largely upon individual peculiarities, temperament, occupation, etc. Often in some persons a very small amount of astigmatism, without any apparent defect of vision, will produce well-marked symptoms of asthenopia, whereas in other individuals quite an appreciable degree will not interfere in the slightest with their personal comfort. They may be even entirely ignorant that anything is the matter with their eyes until discovered by accident and their attention is directed to it.

A striking example of this latter condition came under my observation at the New York Eye and Ear Infirmary quite recently:

A man, aged thirty years, having been struck in the left eye with a piece of wood, presented himself for treatment of same. There was considerable injection of the conjunctiva, and he complained of much pain. He was referred to me by Dr. Derby to have his vision tested. I found vision of left eye to be $\frac{20}{100}$, and suspected immediately some internal injury to the globe. When I uncovered the good eye, however, his vision was but little better—$\frac{20}{70}$.

The ophthalmoscopic examination revealed nothing abnormal except an astigmatism; the amount was estimated by Javal's ophthalmometer and retinoscopy to be 2·50 dioptres; same condition was found in the right eye. With the correcting glasses his vision was very nearly normal—$\frac{20}{30}$ + in both eyes. I recommended him to get the glasses, but he said "he could not use them at his work; his eyes had not troubled him before, and he could see good enough anyway."

He was, of course, an illiterate person, and, his occupation not requiring very accurate vision, he did not realize the absence of it. There was not any effort to obtain it, and therefore presented none of the symptoms usually found in such conditions.

The following case will illustrate the very severe symptoms which can be produced by a slight degree of astigmatism:

Miss M., aged twenty-two years, came to my office, having been recommended by a friend who had been relieved of very severe headaches by using a pair of glasses which I had prescribed. She said she did not know that there was anything the matter with her eyes; in fact, her sight seemed to be particularly good, but she had been so impressed by the relief in her friend's case that she wanted to know if her eyes could possibly be the cause of her headaches.

She had been suffering with severe sick headaches since she was about fourteen years old, and nothing seemed to relieve them. At one time she had what the doctors called an attack of "chorea," lasting for four weeks. She got well of this and has never had anything like it since.

The headaches, however, have continued with varying frequency, sometimes two or three a week, and occasionally so severe as to compel her going to bed. Any prolonged application to study or music gave great discomfort, and generally produced a headache. They would, however, sometimes come on early in the morning without any exciting cause.

Her first visit to me was in April, 1890. Vision of both eyes was then $\frac{20}{15}$. Ophthalmoscope showed Co. H. astig. I estimated the amount of astigmatism by retinoscopy to be 0·75 D., but any glass blurred her vision owing to spasm of accommodation.

I ordered a solution of sulphate of atropine, two grains to the ounce—two drops in each eye twice daily. She returned in two days. Her vision was then reduced to $\frac{20}{70}$ in each eye. By retinoscopy I estimated the refraction to be O. D. $+ 1 \bigcirc +$ 0·75 cyl. ax. 90°; O. S. $+ 1{\cdot}25 \bigcirc + 0{\cdot}50$ cyl. ax. 90°, vision = $\frac{20}{15}$. I ordered these glasses to be worn constantly.

She improved very rapidly, using her eyes with greater comfort, and headaches became less frequent.

I saw her several times for the first three months, and occasionally up to May, 1891, about one year after first visit. During that time I had increased the spherical glasses 0·75 D. to correct the latent H., which had become manifest. She said on her last visit that she never felt better, and scarcely knew what it was to have a headache. I heard of her a few days since and she was continuing in good condition.

It would be easy to present numerous cases of astigmatism, with varying amount of asthenopia, which are entirely relieved of these distressing symptoms by using proper glasses; they occur in the daily practice of every ophthalmologist.

Much importance has been attached in recent years to oculo-motor disturbances, and great advances have been made in the diagnosis and treatment of cases in which there is weakness or loss of equilibrium of the ocular muscles, attended by severe symptoms of asthenopia.

My own experience in dealing with such cases is rather limited; but there can be no doubt, from the statements of unquestionable authorities, that the proper use of prisms and tenotomies give most satisfactory results. I admit that much treatment is indicated under certain conditions. I think, however, we find cases exhibiting decided muscular error which are entirely relieved of the symptoms by an accurate correction of the coexisting ametropia, especially astigmatism; at any rate, the correction of the ametropia is a most important first step in the treatment of such cases.

I have a patient under my care at present who has an insufficiency of the internal recti of 4°. She had tried prisms of of 2° base inward for each eye and found no relief from her asthenopia. I found an astigmatism of 0·75 each eye and ordered her the correcting glasses—0·75 cyl. ax. 180° O. U. for distance, and + 0·75 cyl. ax. 90° for near, without the prisms, and she expressed herself as perfectly satisfied. The necessity for two glasses—one for near work and one for distance—is on account of her presbyopia.

What I have said so far is simply to show the importance of being able to recognize and accurately correct astigmatism.

There are two classes of tests for estimating errors of refraction—subjective and objective.

Subjective methods, such as examining with test-types and glasses, being entirely dependent upon the patients' idea of what they see, are most unreliable; in children and illiterate persons, even those who lack the power of discrimination, useless; especially is this so when astigmatism is present. We therefore chiefly rely upon the results of objective tests which are independent of the patient's observations.

Estimating errors of refraction with the ophthalmoscope by direct examination is objective and possesses the special advantage of informing you as to the condition of the fundus and media of the eye, but it requires long practice and great skill to obtain accurate results as to the state of the refraction; and, even in the hands of the most expert, I question very much the ability to distinguish the refractive power between two meridians of the eye amounting to 0·50 D. or less, as is the condition in astigmatism of a low degree.

It is well to commence the tests with the ophthalmoscopic examination and get some idea as to the refraction; but we need greater accuracy and must go further.

In Javal's ophthalmometer, which is a purely objective test, we have a most expeditious means of estimating astigmatism, being able with this instrument to discover in a few minutes not only the axis of the meridians of greater and lesser curvature of the cornea, but the amount of difference in dioptres; but it merely shows corneal astigmatism, giving no idea of the total refraction of the eye, which must be estimated by other means; moreover, there is often an irregular curvature of the lens (lenticular astigmatism), of which, of course, Javal gives us no idea.

Also, I have found two or three cases recently in which Javal indicated an astigmatism with the rule—that is, the vertical meridian of the cornea more convex than the horizontal, requiring for correction either a convex cyl. ax. 90°, or a concave cyl. ax. 180°. Retinoscopy indicated the opposite condition, the patients requiring for correction a convex cylinder axis 180°, which latter glass they accepted, getting perfect vision and comfort, showing evidently an error in the indication by Javal.

The objective test just referred to is the one to which I especially wish to draw attention. It is variously known as retinoscopy, keratoscopy, koroscopy, or pupiloscopy, most commonly "the shadow test."

This method is not very new, having been suggested by Sir W. Bowman in 1864 (Donder, page 490). He drew attention to the detection of regular astigmatism of the cornea and direction of the chief meridian by using mirror of ophthalmoscope alone.

Dr. Cuignet, of Lille, published the first accurate explanation of this method of examination in 1874, in an article entitled Keratoscopy. Dr. Parent, of Paris, published an article on the subject in 1880 in the *Recueil d'ophthalmologie* for February. Dr. Forbes and Dr. Charnley have written on it in the *Ophthal. Hospt. Reports*, vol. x.

I think all the works on refraction and diseases of the eye of recent date include retinoscopy among the tests for errors of refraction, and explain to some extent its theory and practice. Some authors attach but little importance to the shadow test. Being unfamiliar with its practice, they are skeptical as to its possibilities and usefulness.

One writer, while he states that though in some difficult cases it will remain our best objective test, still thinks that it is much overrated, and we shall do well to use it only as an auxiliary. These remarks are somewhat inconsistent.

Another author, agreeing to the foregoing, adds that "ability to employ the shadow test is well worth possessing, but it never can attain the value of direct ophthalmoscopic examination, as it teaches nothing of the condition of the fundus"; neither does Javal's ophthalmometer. The same objection might be made to the use of this instrument, and I am sure that this author would find it most inconvenient now to dispense with Javal.

I do not maintain that retinoscopy is infallible and recommend it to the exclusion of other tests; it is well to employ all and compare the results.

My experience for the past three years as assistant surgeon at the New York Eye and Ear Infirmary, during which time I have had the opportunity of examining a very large number of cases of astigmatism, has been that retinoscopy gives better results than any other method, and I am convinced that it is the most accurate objective test for estimating astigmatism, particularly when of small degree. With practice we can easily detect a difference of 0·25 D. in refraction between two meridians of the eye, which is very difficult to do with any other test.

As an example of what can be accomplished with retinoscopy I will mention one case, the facts of which can be verified by Dr. Derby, Dr. Adams, and Dr. Murray, who were present at the time of the examination:

> Dr. Adams was fitting the patient for glasses, and asked me to estimate the refraction by retinoscopy. I was told that the patient had a reduction of vision to $\frac{20}{100}$, due to an error of refraction. By the shadow test I at once recognized a mixed astigmatism, and in less than five minutes had determined the correction, which was − 2 ○ + 3 cyl. ax. 90°. With these glasses the patient read $\frac{20}{30}$, and no improvement in vision could be made by in any way changing the combination; there was some spasm of accommodation present, so atropine was ordered to be used two days.
>
> Under atropine the correction, as indicated by retinoscopy, was − 1 ○ + 3 cyl. ax. 90°. As was expected, the apparent myopia was reduced; the astigmatism remained unchanged. With these glasses vision was $\frac{20}{30}$ +, same as before the use of atropine.

This is not an isolated case; it is one of many which I could report proving the rapidity and accuracy with which one can estimate astigmatism by this method, and without a mydriatic, which fact many deny.

I use a mydriatic not in order to practice retinoscopy, but because it is indicated to relieve spasm of accommodation, which is frequently present in cases of astigmatism. The accurate correction of errors of refraction by this method—in fact, by any—of course requires a certain amount of skill and practice, and necessarily a knowledge of refraction. Its application, therefore, is restricted somewhat to the specialist, but it is not without some interest to the general practitioner.

It is very simple, and any physician can easily become sufficiently familiar with its practice to detect the presence of astigmatism, and all the paraphernalia needed for diagnostic purposes is a plane mirror and a few spherical glasses, convex and concave.

As I have found even many ophthalmologists who are unfamiliar with the shadow test save by name, I may conclude that the majority of my colleagues here who are not ophthalmologists are unacquainted with it. I shall therefore endeavor to briefly describe it, not entering too much into detail. For a full explanation I would refer you to the article on this subject in *Refraction of the Eye* by Morton. It is the simplest and best description I know of. In order to appreciate the phenomena of retinoscopy, one must clearly understand and constantly bear in mind the manner in which rays of light enter and emerge from the eye in the different conditions of refraction.

I must therefore first recall a few definitions.

In the emmetropic or normal eye, when accommodation is relaxed, the retina is at the principal focus of the dioptric system; therefore rays of light from a distant object entering the eye parallel, are exactly focused on the retina; conversely, rays emanating from the retina emerge from the eye parallel.

Any departure from this condition is abnormal and termed ametropia. Under this head we have hyperopia, when the retina is in front of the principal focus of the dioptric system; consequently, rays entering the eye parallel are focused behind the retina, and rays emanating from the retina emerge from the eye divergent.

In myopia the retina is behind the principal focus of the dioptric system, and parallel rays entering the eye are focused in front of the retina, and rays emanating from the retina emerge from the eye convergent, uniting at a point in front of the eye at a distance in inverse proportion to the degree of myopia.

In astigmatism the refraction of the eye is different in two opposite meridians (I speak only of regular astigmatism); consequently rays entering the eye are not brought to a common focus, and, emanating from the retina, have a direction in accordance with the refractive condition of the meridian through which they emerge. The varieties of regular astigmatism are simple hyperopic—in which one meridian is emmetropic, the opposite being hypermetropic; co. hyper. astig.—both meridians being hyperopic, but of different degrees; simple myopic astigmatism—one meridian being emmetropic, the other myopic; co. myopic astigmatism—in which both meridians are myopic, one more than the other; and finally mixed astigmatism—in which one meridian is hyperopic, the opposite myopic.

The indications by retinoscopy as to the condition of refraction depend upon the direction in which an area of light and shade on the retina reflected from a mirror appears to move in reference to the direction in which the mirror is rotated; also rate of motion and intensity of illumination.

If you take a convex lens and hold it in front of a screen at the focal distance of the lens, and then direct the rays from a lamp reflected by a plane mirror through the lens, you will see on the screen a bright, well-defined image of the lamp, surrounded by a dense shadow.

If you now change the position of the lens either nearer to or further from the screen, the area of light becomes larger and less brilliant, and the shadow fainter the further away the lens is moved from its original position, its focal distance.

If you now rotate the mirror slightly from side to side or up and down, you will observe, looking direct at the screen, that the area of light and shade move in the same direction as the mirror is rotated, in all positions of the lens.

Supposing now the screen to represent the retina, and the convex lens the refracting media of the eye, we have precisely the same results.

In emmetropia, the retina being at the principal focus of the dioptric system, rays reflected from the mirror meet exactly at the retina. We have therefore the brightest image of the lamp formed, as was the case with the lens and screen when the latter was at the focal distance of the lens.

The higher the degree of ametropia (either myopia or hyperopia), the greater is the departure from the above conditions, the retina being either in front of or behind the point at which the rays meet, consequently the fainter is the illumination.

So that by the intensity of the reflex seen in the eye we can at once form an idea as to the degree of error of refraction.

The rate of motion of the area of light on the retina requires keen perception to appreciate and is not of very much practical value; so I shall omit to consider it here.

The important indication both for diagnosis and correction is the apparent direction of motion of the light and shadow compared with the motion of the mirror.

As was illustrated by the lens and screen, the area of light and shade on the retina really moves in the same direction as the mirror in all states of refraction; but, as we must observe this through the refracting media of the eye, the apparent motion will depend upon the direction in which rays from the retina emerge from the eye and strike the observer, and for this reason indicates the condition of refraction.

If the rays from the eye under examination do not cross before reaching the observer, he obtains an erect image of the light on the fundus, consequently the motion will appear to be in the same direction as it actually is—that is, with the mirror.

If, however, the rays have crossed before reaching the observer, there will be formed between himself and the patient an inverted aerial image of the light on the fundus, and, since the erect image moves in the same direction as the mirror is rotated, the inverted aerial image, which is the one regarded, will move in the opposite direction—that is, against the mirror.

If the observer be at a distance of one metre and twenty centimetres from the patient, the first effect (that is, the area of illumination in the patient's eye moving in the same direction as the mirror) will be seen in emmetropia and hyperopia, because the rays do not cross and he sees the erect image on the fundus; also will this be the case in myopia of less than 1 D., because, although the rays are convergent, he intercepts them before they meet to form the aerial image, and still sees the erect image on the fundus.

In myopia of 1 D. or more the rays from the patient's eye cross before reaching the observer, and at the point of meeting form an aerial inverted image of the illuminated area of the fundus; consequently this image referred to the eye appears to move in the opposite direction to which the mirror is rotated.

The intensity of the illumination having given some idea as to the degree of error, and the direction of motion the kind, the amount can be estimated by ordinary trial glasses in the following manner: The patient being seated in a dark room with the lamp immediately above and a little behind the head, the observer sits directly in front, at a distance of one metre and twenty centimetres, his eyes being about on a level with the patient's. Looking through the small hole in the center of the mirror and reflecting the light on to the patient's eye, the latter directing his gaze to the observer's forehead, there will appear in the area of the pupil the light reflected from the fundus surrounded by the shadow.

By now rotating the mirror on its various axes the light and shadow will move across the pupillary area at right angles to the axis on which the mirror is rotated and indicate the refraction of that meridian.

Let us suppose that the motion is with the mirror; convex glasses are then placed in front of the patient's eye, gradually increasing in strength until the motion of light is just reversed (*i. e.*, against the mirror). Myopia of 1 D. must then exist to produce this effect, and, taking this into consideration, by deducting 1 D. from convex glass used, we have the correction.

If the motion is reversed in one meridian (*i. e.*, going against the mirror) by a spherical glass, but remains unchanged (*i. e.*, with mirror) in the opposite meridian, astigmatism is present. The amount is then estimated in one of two ways: by either continuing to increase the strength of spherical glass until the one is found which just reverses the motion in the previously uncorrected meridian; the difference in strength between this glass and the one first found to reverse motion in one meridian will represent the degree of astigmatism.

The better method is, I think, to use cylinders. Having first found the spherical which just changes motion in meridian of lesser error, leaving this in frame, place a cylinder in front with its axis at right angles to meridian in which motion of shadow is still with mirror, increasing strength of cylinder until motion is just reversed and is the same in all meridians. The cylinder will then represent the degree of astigmatism and the correcting glass be found by deducting 1 D. from spherical and then combining this with cylinder.

Another advantage in using the cylinders instead of correcting each meridian separately with spherical glasses is that the axis of cylinder can be changed and its proper position determined should the astigmatism not be in the principal meridians.

In the same manner as described above, myopia and myopic astigmatism can be estimated, using concave glasses instead of convex, increasing the strength of the glasses in front of the patient's eye until we have produced a condition of 1 D. of my., when the shadow will still move slightly against the mirror; with the next stronger glass the motion being with the mirror; allowing as before, when dealing with hy. for this 1 D. of my. necessarily existing to produce the effect, we get the correcting glass, only in my. the 1 D. must be added, not subtracted.

A concave mirror may be used instead of a plane one, remembering that the effect is exactly opposite in the same condition of refraction.

I prefer the plane mirror because it gives a better illumination at a greater distance, and the farther off one is from the patient the more probable is a perfect relaxation of accommodation. Again, should the patient look at the mirror, as he is very likely to do—in fact, some authorities so direct—the object seen will be at a still greater distance, being the image of the lamp projected as far behind the mirror as the lamp is in front. The distance from the patient must always be taken into consideration, as on this depends the allowance to be made for myopia existing in order to have the far point of the patient a little in front of the observer, and thus produce the effect of just reversing the motion of the shadow.

The chief objection to the practice of retinoscopy and the reason I think why it is not more generally used, is the tedious process of changing glasses in front of the patient's eye, the strength of which must be increased or diminished by consecutive numbers, in order to obtain accurate results.

To obviate this difficulty I have devised an apparatus which Mr. Meyrowitz has constructed, and I find it very useful, greatly facilitating the process of examination.

It consists essentially of two discs, about a foot in diameter, and in these discs convex and concave spherical lenses are so arranged that by adjusting one of the discs for a certain range of glasses, the strength of glass in front of eyepiece is increased or diminished 0·25 D. by turning the other disc either to the right or left. The cylinders are arranged in consecutive numbers from 0·25 D. up, in slides which fit into a clip on the front of the eye-piece that revolves, so that the cylinder can be placed in any axis, the same being indicated as on trial frames; the strength of the cylinder can then be increased or diminished by pushing slides through clips.

The lenses are all the same size, as in ordinary trial cases, which I think is an advantage over other instruments of the kind.

Treatment of Habitual Abortion.—"Asafœtida has been recently recommended in cases of habitual abortion. Dr. Turazzo gives it in pills containing a grain and a half as soon as it becomes clear that a new pregnancy has commenced. At first only two pills are prescribed, but later on the number is gradually increased to ten daily. The treatment is continued until the labor is over, and then the daily dose is gradually diminished. By this method cases where as many as five successive abortions had occurred have been successfully treated, and where in one instance a miscarriage appeared to be imminent during the seventh month it was averted and the patient was delivered at full term."—*Lancet.*

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POLITICS AND THE CITY BOARD OF HEALTH.

The city of New York has had a board of health since the year 1866. The constitution of the board, its official title, and the legislation under which it has had its authority and performed its functions have varied from time to time. For certain periods the board has nominally been non-partisan, but it has always been more or less managed by politicians. As society here is at present constituted, perhaps this is unavoidable. It is, nevertheless, to be regretted. Recently the connection of politics with the board of health's work has been brought more pointedly than usual to the notice of medical men—partly by the resignation of almost all the physicians who had constituted a sort of honorary advisory body, several of whom openly gave as their reason for resigning an impression that changes had been made in the corps of medical men serving under the board, not because they were called for in the interest of sanitary administration, but at the dictation of the politicians. On this matter we have already commented.

Another incident that has turned public attention to the subject is an editorial that appeared in our issue for July 30th, in which the board was substantially charged with inefficiency, and the alleged inefficiency imputed to the fact that its president was a politician. In our number for August 13th we printed a letter from the president of the board, Mr. Wilson, showing that the information on which our article had been based was in some important respects erroneous. In the mean time the Reform Club had issued a circular in which it reprinted our article. We appended to Mr. Wilson's letter a frank acknowledgment that we had been in error. Our course in this matter has called forth criticism from some of the newspapers. The *Evening Post*, for example, calls our article "an incredible piece of blundering." The Reform Club would hardly have reproduced our article if its errors had been so palpable as to constitute incredible blundering. Moreover, if it were itself infallible, the *Evening Post* might be more entitled to use such language than its actual character warrants. The *Post* has been known to make erroneous statements in its editorial columns. Perhaps some of its readers can recall the statements it made not long ago concerning the Arlington Mills, together with Mr. Whitman's refutation of its allegations, which refutation the *Post* slurred over as of no consequence. The *Post* calls our acknowledgment of the soundness of Mr. Wilson's contention "an apology of the most humiliating sort," and speaks of it as having been extorted. If it is humiliating to acknowledge frankly that one has done an injustice, nobody can accuse the *Post* of ever having humiliated itself in that way, for the *Post* is not really "edited in heaven," as some have contended. As to our remarks having been extorted, we were not even asked to say anything, but simply to publish Mr. Wilson's letter. All the negotiations, from first to last, relative to the publication of that letter were of the most courteous and kindly sort.

Curiously enough, the *Mail and Express*, in two of the most slovenly articles we remember ever to have read, commends our editorial (founded on statements now admitted to be erroneous), and is "astonished and mortified" at our retraction.

We hold it to be the duty of a journal always to acknowledge an error that involves an injustice, no matter what position of its own may thereby be vitiated. At all events, this is the course that this journal will always pursue.

THE INFLUENCE OF ARTIFICIAL ELEVATION AND DEPRESSION OF TEMPERATURE ON THE COURSE OF INFECTIOUS PROCESSES.

Most clinicians accept fever as the principal index of the course of an infective process in the animal organism. According to Macalister's theory of the thermal nervous system, fever depends upon an impairment of thermotaxis, an exaltation of thermogenesis, and an interference with thermolysis. These disturbances are produced by some specific poison that enters the blood and causes qualitative and eventually quantitative changes in the latter. Professor Welch stated in his Cartwright Lectures (*New York Medical Journal*, April 14, 1888) that an increase of temperature of four or five degrees above the normal did not necessarily involve danger to life or even any serious disturbance of the functions of the body, Krishaber having shown that in man the temperature could be gradually raised to 41·4° C. without much discomfort. Yet pyrexia, as seen by the physician, is the expression of certain pathological processes that interfere with the physical and mental welfare of the person affected, and that consequently demand treatment.

In *Le Mercredi médical* for August 3, 1892, there is a paper by Professor A. Rovighi detailing the results of his experiments made to determine the influence of artificial elevation and depression of temperature upon the course of infectious processes. He inoculated rabbits with human saliva that was poisonous for these animals, and placed some of them, together with uninoculated rabbits, in a thermostat in which the temperature oscillated between 36° and 40° C. Other inoculated rabbits were kept in ordinary cages, while still others were placed in cold chambers and in cold baths in which their temperature did not exceed 40° C. Death occurred earlier in the latter animals than in those in the thermostat; in fact, these latter died more slowly than those in the ordinary cages. But if the temperature of the rabbits in the thermostat exceeded 43°, death occurred quickly. Elevation of temperature occurred much more rapidly in the infected than in the uninfected animals in the thermostat. The loss of weight was much greater in the animals kept in a lower than in those in a higher temperature. At the point of inoculation in the latter there was an abundant fibrinous exudate containing a large number of leucocytes, while in the refrigerated animals the exudate was sero-purulent and less rich in leucocytes. The blood of the animals in the thermostat was much more toxic than that of those refrigerated, though cultivations succeeded better if made from the blood of the latter animals. Turtle-doves succumbed rapidly when they were inoculated and placed in the cold chamber.

Rabbits that were inoculated with the cultivations of the bacillus of mouse septicæmia and subsequently given acetanilide rapidly succumbed to a considerable decrease of temperature, while those infected in the same way that were placed in a thermostat presented no other morbid phenomena than an induration at the point of inoculation.

Rabbits and guinea-pigs inoculated with charbon survived longer if kept at a high than at a low temperature, the charbon bacillus appearing later in the blood of the former than in that of the latter.

Walter published in the *Archiv für Hygiene*, 1891, Bd. xii, p. 329, the results of experiments in the artificial elevation of the temperature of the body on the course of infection with the pneumococcus. He found that high temperatures prevented its passage into the blood.

It appears to follow from these experiments that an elevation of temperature to a certain degree exercises a favorable influence upon the resistance of the infected organism, constituting a means of defense, and perhaps destroying the specific virus. The deleterious influence of refrigeration is proved by the loss of weight, and the observations of Röhrig and Kuntz, Colossanti and Kukler, Theodor, and others have shown that gaseous exchange and particularly tissue oxidation in febrile animals are much more intense in those exposed to cold than in those kept in thermostats.

The growth of micro-organisms produces a toxic substance that possesses the property of arresting the development of these organisms, and it may be inferred that the greater toxicity of the blood of animals kept in a thermostat depends upon the production of these toxines that constitute an obstacle to the invasion of the blood by the micro-organisms.

The researches of Penro (*Centralblatt für klinische Medicin*, 1892, No. 7) have shown that caryocinesis and the regeneration of tissue are effected much more rapidly at a temperature of from 34° to 38° than at a temperature of from 7° to 12° C. Recent researches by bacteriologists have shown that the destruction of pathogenic bacteria is principally effected by the co-operation of living tissue elements, particularly leucocytes and lymphocytes, the death of which liberates antitoxic substances that neutralize the action of the bacterial toxines.

Cantani (*Transactions of the Tenth International Medical Congress*), in his paper on Antipyresis, stated that the remedy for a fever was that which would act on the cause of the disease, as quinine acted in malarial poisoning. While antipyretic remedies lowered the temperature by diminishing thermogenesis, they did harm in interrupting the course of the fever by diminishing the vitality of the human organism and its power of resistance. The most that could be done was to diminish the accumulation of heat in the febrile body without interfering with thermogenesis, and this was better accomplished by the cold-water treatment than by internal antipyretics.

Clinical data have certainly substantiated Cantani's position, and these recent researches open new fields for inquiry. Certainly the best results in treating typhoid fever have been obtained by the use of cool baths that keep the temperature below 40° C., and, while the evidence in the case of pneumonia is not yet sufficiently extensive, it leans toward their utility in that disease. It has not been shown that caryocinesis and tissue regeneration are effected at a temperature of from 39° to 40° C. as well as at the lower temperatures that antipyretic treatment endeavors to secure. It furthermore remains to be demonstrated that the presence of a micro-organism in the blood is more noxious than that of its toxine. It is, however, by means of such experiments as these that medical science will ultimately discover remedies that will act on the cause of febrile disease.

MINOR PARAGRAPHS.

A MODIFICATION OF THE OPERATION OF PARTIAL OR COMPLETE EXCISION OF THE TONGUE.

Mr. Lane makes the following suggestion in the *Lancet:* He has found the procedure of service in diminishing pain and discomfort after the operation, hastening recovery, and lessening the danger of pneumonic troubles by reducing the amount of discharge. In the case of removal of half of the tongue, the suggestion is to suture the cut margin of the mucous membrane on the dorsum of the tongue to the edge of that covering the floor of the mouth, so as to leave no raw surface uncovered by mucous membrane. When it is necessary to remove the body of the tongue, after carefully defining the extreme limits of the growth and giving it a wide margin, a large flap of mucous membrane with a substratum of muscular tissue is sliced off from that portion of the tongue which is of a certainty free from the growth, and this flap is sutured accurately to the free margin of the mucous membrane in the floor of the mouth and to that covering the root of the tongue, so as to cover the entire raw surface. Probably this procedure or one very similar is familiar to some surgeons, but it certainly is not to all. It appears to be practicable in many if not in all cases, and when practicable it promises great utility.

THE FUNCTION OF THE LACRYMAL PUNCTA.

Dr. George M. Gould, in a recent number of the *Medical News*, makes a timely protest against the routine practice of some ophthalmologists of slitting up the canaliculus in all cases of epiphora, as if the punctum was of no utility. The punctum is surrounded by a series of muscular fibers which act as a sphincter, as a willing gateway for the excretion of pure tears, but also as a careful guard to prevent the passage of dust, irritating particles, and such viscid products of inflammation as would tend to cause stenosis of the connecting drainage system lying beyond and below. This function is of value, and the seriousness of its loss should be considered by the ophthalmologist in each case before slitting up the canaliculus.

"ANGLEBERRY," A NEW NAME FOR BOVINE TUBERCULOSIS.

The July issue of *Public Health* notes a prosecution, in a Scottish borough, of butchers who prepared for sale a carcass that was unfit for human food by reason of tuberculosis. The defense was a denial. One of the accused said that the animal had been suffering from "angleberry," and he had called the attention of the owner to the fact of invasion of the pleura and diaphragm by that disease. The diseased parts were cut away, evidently with the object of concealing the fact of disease. The accused butcher testified that it was a frequent occurrence to remove with the knife the diseased parts of the pleura in a carcass intended for human food.

TETANUS DUE TO PUNCTURE WITH A HYPODERMIC NEEDLE.

An instructive case is reported in a recent number of the *British Medical Journal.* A patient who had been in the habit of injecting morphine hypodermically into himself came under observation with symptoms of tetanus which eventually resulted in death. A careful search revealed no other cause for the tetanus than a small inflamed and suppurating place near the shoulder, which had been caused by one of the hypodermic injections he had given himself. The lesson taught by this case of the importance of the observance of scrupulous cleanliness, even in so small an operation as a hypodermic injection, can not be too strongly impressed, and the memory of the disastrous effects which may result from the neglect of proper precautions should be firmly fixed in the mind of every practitioner.

THE OUTLOOK AS TO THE CHOLERA.

While it can not be denied that the news of the spread of cholera to various European ports is threatening, especially in view of the fact that several of those ports are points of embarkation for immigrants to America, we are very confident that the disease will not effect a lodgment in the United States, at least through the port of New York. We have great confidence in the new health officer of the port, Dr. Jenkins, who, we believe, will do all that can be done to prevent its getting beyond the quarantine station, and whose *ex-officio* membership in the Board of Health strengthens that body materially in the matter of city sanitation.

A LEUCOMAINE IN THE URINE OF EPILEPTICS.

According to *Le Mercredi médical* for August 3d, Dr. A. B. Griffiths has extracted from the urine of epileptics a new base that is poisonous and produces in animals trembling, urinary and intestinal evacuations, pupillary dilatation, convulsions, and finally death.

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending August 23, 1892:

DISEASES.	Week ending Aug. 16.		Week ending Aug. 23.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	0	0	0	0
Typhoid fever	27	4	59	10
Scarlet fever	46	4	36	2
Cerebro-spinal meningitis	1	1	1	2
Measles	107	9	66	10
Diphtheria	49	12	46	13
Small-pox	16	7	6	2
Varicella	0	0	0	0
Whooping-cough	0	0	0	0

The Medical Society of Virginia.—The twenty-third annual session will convene in the Alleghany Springs Hotel, at 7.30 p. m., on Tuesday, September 13th, and will continue in session through Thursday and probably a part of Friday, under the presidency of Dr. H. Gray Latham, of Lynchburg. The address to the public and profession will be delivered by Dr. Jacob Michaux, of Richmond. The programme announces a discussion on Vertigo, also the following papers: By Dr. W. Edward McGuire, of Richmond, on Appendicitis; by Dr. R. S. Martin, of Stuart, on Laparotomy and the Good accomplished by it in Gynæcology; by Dr. S. W. Dickinson, of Marion, on Some New Ideas that are Old; by Dr. L. H. Keller, of Luray, on The Necessity of Prompt Action in Cases of Placenta Prævia, with Report of Cases; by Dr. Phillip Taylor, of Richmond, on Some Ocular Diseases in Children; by Dr. C. W. Gleaves, of Wytheville, on The Mysteries of Medicine; by Dr. M. W. O'Brien, of Alexandria, on Injuries of the Knee: their Treatment and Results, with Special Reference to the Prevention and Cure of Suppurative Action in and about the Joint; by Dr. C. M. Blackford, of Lynchburg, on The Causative Relations of Bacteria to Disease; by Dr. Alexander Duane, of New York, on Common Sense in the Treatment of Discharge from the Ear; by Dr. L. G. Pedigo, of Roanoke, on Some Uses of the Iodides; by Dr. Joseph A. White, of Richmond, on Cataract; by Dr. F. M. Brooks, of Fairfax Station, on Some Remarks on the Continued Administration of Digitalis, illustrated by the Report of a Case; by Dr. A. Vander Veer, of Albany, N. Y., on Uterine Hæmorrhage and Present Methods of Treatment; by Dr. Joseph Price, of Philadelphia, on The Surgical Management of Fibroid Tumors of the Uterus; by Dr. G. Betton Massey, of Philadelphia, on Modern Electrical Methods as a Substitute for Surgery in Certain Pelvic Affections; by Dr. Irving C. Rosse, of Washington, D. C., on Sexual Hypochondriasis and Perversions of the Genesic Instinct; by Dr. S. J. Fort, of Ellicott City, Md., on What shall be done with the Imbecile? and by Dr. W. Lee Howard, of Baltimore, on Hypnotism as a Therapeutic Agent.

The Kings County Lunatic Asylum.—Dr. William E. Sylvester has been appointed superintendent of this institution, to take office on August 31st. He succeeds Dr. Walter S. Fleming, who has resigned. Dr. Sylvester has had an experience of fourteen years in the management of the insane, having filled positions at the Butler Asylum at Providence, at the Willard State Hospital, and at several other places. His last service was that of superintendent of the Vermont State Asylum for the Insane. The berth to which Dr. Sylvester has been invited is on some accounts a difficult one, but the State commissioners in lunacy may be relied upon to sustain him in his work.

The New York Post-graduate Medical School and Hospital.—On August 19th ground was broken for a new six-story, fireproof building for this school. The completion of the structure is expected in the summer of 1893. Its estimated cost is about $200,000. It is stated that the architect intends to bring out in his plans a number of original features that will be especially serviceable in post-graduate tuition.

The Death of Dr. Thomas F. Wood, of Wilmington, North Carolina.—We regret the announcement of the death of Dr. Wood, of heart disease, on the 22d inst. He was well known throughout the South as the editor of the *North Carolina Medical Journal*, and as secretary of the State board of health. He had rendered valuable services to the medical profession and to sanitary science. Some years ago Dr. Wood learned that he had aneurysm of the aorta. For two years he remained in bed, and he believed that the rest treatment had caused a reduction in the size of the tumor. We presume, however, that it was related to the cause of his death.

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from August 14 to August 20, 1892:*

Taylor, Marcus E., Captain and Assistant Surgeon. The leave of absence granted on surgeon's certificate of disability is extended four months on surgeon's certificate of disability.

Polhemus, Adrian S., Captain and Assistant Surgeon, is granted leave of absence for one month, to take effect about September 1, 1892.

Naval Intelligence.—*Official List of Changes in the Medical Corps of the United States Navy for the week ending August 20, 1892:*

Ashbridge, Richard, Passed Assistant Surgeon. Detached from the Navy Yard, New York, and to wait orders.

Proceedings of Societies.

NEW YORK SURGICAL SOCIETY.

Meeting of April 27, 1892.

The President, Dr. Arpad G. Gerster, in the Chair.

Prolonged Suprapubic Drainage for Chronic Cystitis.—This case was presented by Dr. L. B. Bangs. The patient gave the following history: Gonorrhœa fourteen years ago, which had lasted six weeks; no other venereal history. Seven years ago, while riding in a railway car, he had suddenly been seized with pain in the bladder and an urgent desire to urinate, with a feeling of threatening ejaculation. From this time on he had urinated every two hours, with a certain amount of pain after urination. The intervals of urination had become shorter and the pain more intense.

Two years ago last January he had had an anterior stricture cut internally and had had his bladder drained through the perinæum. After this his bladder symptoms had become worse and he had been compelled to urinate every fifteen or twenty minutes. When the patient had come to Dr. Bangs, in January, he had become much emaciated and was in a bad condition generally. He had been compelled to sleep on the floor in order to get any rest whatever, as the bed soon became very wet and uncomfortable. When the speaker first examined him the urethra could only be explored as far as the deep portion. The bladder could not be explored at all. Suprapubic drainage had been decided upon, and had been done in February. When the interior of the bladder had finally been exposed, the mucous membrane had been seen to be pulpy and purplish-red. There had been no ulcerations or new growths whatever. Since the operation the bladder had been drained by Dr. Bangs's apparatus, which consisted of a soft-rubber catheter held in place by a safety-pin between a felt pad, fitting next to the body, and a hard-rubber pad on the outside. This hard-rubber pad had been adapted to the shape of the body by heating, then shaping and cooling it. The whole apparatus had been kept in place by straps of adhesive plaster. The patient had regulated the tube according to his sensations, having sometimes worn it deep in the bladder and at other times just within the walls of the bladder. The urine had been carried by a tube into a rubber urinal, which ran down by the leg. The kidneys were normal, and the speaker would like to know when he might close the bladder with safety to his patient. He also had two cases of kidney drainage he had been treating in the same way.

The President had experienced difficulty in keeping the plate in place in women, owing to the shape of the pelvis and the flabby condition of the abdomen. He had advised fastening the plate to an abdominal support in such cases.

Lymphosarcoma.—Dr. Frank Hartley presented the case of a man, aged twenty-two, in whom the disease had begun in January, 1891. The post-cervical chain on the right side, the anterior chain of the same side, then the posterior chain of the left side of patient's neck, had successively become enlarged. When he had first presented himself to Dr. Hartley the right posterior glands of the neck had grown into a very large fluctuating tumor. This tumor had been freely incised, scraped, cauterized, and washed with a ten-per-cent. solution of zinc chloride. The patient had then been given liquor potassii arsenitis, under the use of which the wound had progressed favorably and all the other glands had diminished in size. At the end of two months the use of arsenic had been discontinued, and at that time the trouble had begun to return. The arsenic had again been resorted to after the wound had again been scraped and cauterized. This treatment had been continued, and at the present time the patient presented only a few enlarged cervical glands and a cicatrized wound at the seat of the operation. The kidneys, liver, and spleen had apparently been healthy, and there had been no axillary enlargement. Dr. Hartley had treated two other cases with arsenic where the response to the treatment had been equally prompt. No operation had been required in either of these cases.

Dr. F. Kammerer had treated several of these cases with arsenic, but had had no such good results.

Skin-grafting in Syphilitics.—Dr. Hartley also presented two cases which illustrated skin-grafting in the different stages of syphilis. The first patient had had syphilis twelve years ago, and had been treated in the hospital from time to time for eight years. Some time ago, when the left side of the patient's face and neck had been ulcerated, the speaker had tried skin-grafting, but the grafts had failed to "take." In these cases the disease had been still active. In his second case, which had been treated in the hospital from time to time for five years, the speaker believed the disease had practically run its course. In this instance the grafts had all taken and the wound had healed since the operation.

He thought these two cases well illustrated the fact that the disease must have practically run its course before skin-grafting would succeed.

Dr. Willy Meyer agreed with Dr. Hartley. In one case of syphilitic ulcer of the leg, where he had grafted, he had been sure at the end of ten days that the grafting would be a success. Afterward the whole graft had come away.

Amputation at the Hip Joint.—Dr. A. J. McCosh showed a man, twenty-seven years old, whose general health had been good. An operation had been done eight weeks before. Hæmorrhage had been controlled by transfixing pins, above which had been placed a rubber ligature (at the suggestion of Dr. Wyeth). A circular incision had been made six inches below the great trochanter and a vertical incision on the outer side of the thigh, from the top of the great trochanter to the circular incision. All the larger vessels had been tied before the removal of the ligature, and there had been but little oozing. The disease had originally been an osteosarcoma of the shaft of the femur, but at the time of the operation it had extended to the neck of the bone and to the surrounding muscular tissue. The bone had been so soft that it had fractured high up during the preliminary examination, which fact had rendered it very hard to disarticulate the head of the bone. The wound had been sutured, with drainage, and a slight sinus had persisted where the drainage-tube had been placed. The speaker had been unable to get any suggestions as to the application of an artificial limb.

Dr. J. A. Wyeth had done three such amputations—one the day before. He had always left the pins and ligature in place until all the muscles had been stripped from the bone, thus preventing much oozing, which had taken place generally when the bone had been stripped of its muscles. After this the speaker had removed the pins and ligature, as the remainder of the operation had been accompanied by but little hæmorrhage. He had found it very convenient to leave the bone much longer than the stump, as it had afforded a longer lever, thus rendering disarticulation quite easy.

Dr. B. F. Curtis had had two cases in which he had controlled the hæmorrhage by an Esmarch bandage placed around the thigh and abdomen in a figure-of-8 direction. In his last case the drainage-tube had been removed in twenty-four hours. The wound had been entirely healed in ten days. The speaker showed photographs of the result.

Dr. Rushmore had done one operation during the winter in which he had controlled the hæmorrhage by the Jordan-Lloyd device with perfect satisfaction. His patient, an old man, had made a good recovery.

Exsection of the Knee.—Dr. McCosh also presented a patient whose knee he had exsected a year ago for chronic tubercular inflammation. An inch and a half of the lower end of the femur and the upper end of the tibia had been removed. The patient could now walk eight or ten miles without pain.

Iodoform Injections in Local Tuberculosis.—Dr. Woolsey read a paper on this subject.

Dr. Curtis had used the iodoform injection in the ankle, knee, shoulder, and elbow joints where tuberculous inflammation had been present. He had never used it in the hip joint except after operation where the joint had been left open. He had found the injection beneficial in some cases, and in some cases he had seen no benefit from such injections. The operation had often been very painful, which had possibly been caused by distention. He therefore advised smaller injections (ʒj to ʒij), repeated two or three times a week. Where it had been possible he had withdrawn a portion of the tuberculous material before he had injected the iodoform. This had not always been an easy matter, as the inflammatory products had often been so thick and ropy as not to pass readily through a cannula. He had cured a case of spinal caries in two weeks by the injections, two ounces of pus having been first removed. The speaker had cured tubercular joints elsewhere in the body in from four to five weeks by the same method. He had always kept the joints at rest while he had been using the injections.

Dr. Hartley had cured a case of Pott's disease by the injections, having first opened the abscess and thoroughly cleansed it. Only three injections had been necessary. This case had been treated three years ago. The boy was now a boot-black, was entirely well, and had been for a long time. Dr. Hartley said that he had seen no evidences of pain where there had not been great distention.

Dr. Bangs had often found the injections of iodoform useful in tubercular inflammations of the testicle and epididymis, but he had never cured a case of tubercular cystitis by the injections, though he had often relieved patients' pain. In the chronic cystitis of old men he had often given the patient great relief by the iodoform injections, even though the cystitis had not been tuberculous.

Dr. Woolsey had never derived any satisfactory results in other than the tuberculous form of cystitis by such injections.

Giant-cell Sarcoma of the Head of the Tibia.—Dr. C. T. Poore presented a specimen from a woman aged fifty years. Ten years before, she had had removed from the cervix uteri what had been supposed to be an epithelioma. There had never been any return of the growth. In November, 1890, she had begun to complain of pain in the head of the left tibia and in the course of the sciatic nerve. The pain had gradually increased and been accompanied by an enlargement of the head of the tibia. There had been no history of any injury. At the time of the examination (May 24, 1891) the patient had been unable to walk and any movement of the joint had given her excruciating pain. There had been a swelling three quarters of an inch in diameter on the anterior and inner side of the head of the left tibia. The tumor had pulsated strongly, but there had been no bruit. The bone could be felt and had been partially destroyed. The circumference of the leg at the affected point had been an inch greater than the corresponding measurement of the other leg. The tissues had been œdematous and the leg somewhat swollen. There had been no enlarged glands. By June 5th the tumor had increased in size; the area of the pulsation had also increased. Dr. McBurney had seen the patient in consultation on June 10th. Amputation at the middle of the thigh had taken place on June 13th, and by June 28th the stump had entirely healed. Upon examining the tumor, it had been found that the entire head of the tibia had been destroyed and replaced by the growth, only a thin shell of the bone and the articular cartilage having remained. The cartilage had seemed normal. Dr. Freeman had reported the tumor a typical giant-celled sarcoma. At the present time there was no return of the growth and the patient was perfectly well.

Malposition of the Uterus.—Dr. Poore also presented a uterus he had removed from a child of twelve years, who had been admitted to the hospital on December 15, 1889, having then an oblong swelling over the left external abdominal ring. It had not been painful and had given the patient no inconvenience. It had been diagnosticated as an enlarged lymphatic gland. On January 13, 1892, the child had been etherized and the tumor cut down upon. There had been found a white, glistening tumor, firmly attached by its pedicle to the inguinal canal and the external ring, which had subsequently been recognized as the uterus and its appendages. The entire uterus, with the tubes and the broad ligaments, had been entirely without the external ring. The tubes and the ligaments had not been developed. The tumor had been tied off close to the external ring and the wound closed. Vaginal examination had shown the vagina to end in a *cul-de-sac* about an inch behind the hymen. The patient had been discharged on February 14, 1892.

Gall-stones.—Dr. Robert Abbe presented fourteen gall-stones removed from a woman forty years old. The patient had been perfectly well until forty eight hours before the operation. When the speaker had seen her the abdomen had been distended down some distance in the direction of the gall-bladder. There had been a peritonitic crepitus. There had been no lymph exuded, although the gloss of the peritonæum was gone. In the gall-bladder there had been fourteen stones and a quantity of muco-pus. The obstruction had been in the common duct and had been caused by one of the stones.

Dr. Wyeth reported a case with exactly the same history. An operation had been declined and the patient had died.

Sarcoma of the Kidney.—Dr. Abbe also related the history of a child, two years old, who had weighed seventeen pounds, from whom he had removed a sarcoma of the right kidney which had weighed two pounds and a quarter. The child had only lost about half an ounce of blood; there had been no shock or fever. The patient was now well. The hæmorrhage had been controlled by elevating the lower extremities and immediately clamping all arteries, however small, when they were cut. Only about a drachm of blood had been lost in getting down to the kidney. The whole mass had easily been shelled out and brought outside, its pedicle clamped, and the tumor removed. Ligatures had afterward been applied behind the clamps. The speaker believed shock after such operation was chiefly due to loss of blood. Therefore he had been very anxious that this child should lose no more blood than was absolutely necessary.

Book Notices.

Differentiation of Rheumatic Diseases (so called), based upon Communications read before the Royal Medico-chirurgical Association, 1892, Bristol Medico-chirurgical Association, May 14, 1890, and reprinted from the *Lancet*, October, 1891.

By Hugh Lane, L. R. C. P., M. R. S., etc. Second Edition. London: J. & A. Churchill, 1892. Pp. 12–14 to 121.

The author divides rheumatic diseases into four classes: Chronic rheumatism, chronic rheumatic arthritis, chronic rheumatoid arthritis, and chronic gout. He insists upon chronic rheumatoid arthritis being independent of any rheumatic diathesis, considering it a disease of debility that occurs in cases having a strong strumous diathesis and perhaps a history of gout. His suggestion that this variety is of nervous origin was anticipated by J. K. Mitchell more than a score of years ago. That this disease should be treated *ab initio* is a patent fact, for who can say that any case of apparent rheumatism will not prove to be rheumatoid arthritis? While the author's plans of treatment hold fast to that which is old, they are excellent, we believe, for these different diseases; and he is certainly to be congratulated on securing improvement and great relief in nearly eleven twelfths of his cases of rheumatoid arthritis. His success he largely attributes to the virtues of the mineral waters of Bath, and the volume may be considered as a plea for the more general utilization of that spa as a place of resort for persons suffering from these diseases.

A System of Gynæcology, with Three Hundred and Fifty-nine Illustrations. Based upon a Translation from the French of Samuel Pozzi. Revised by Curtis M. Beebe, M. D., Chicago. New York: J. B. Flint & Co., 1892.

It is apparent that this book is merely an abridgment of the recently published translation of Pozzi's excellent work. What the excuse or apology may have been for bringing out a revision or condensation of the translation referred to so soon after that translation was placed before the public is not stated. Possibly the object was a cheaper book. If so, the object has been attained in every way. The preface is a reproduction of the one in the original work, though the author's name is nowhere to be found in it. There is neither index nor synopsis of text, and, so far as convenience for reference is concerned, the comparison with the original is decidedly unfavorable to the translation. This book is not a fair basis for a review of Pozzi's work, which is one of the best treatises on gynæcology that have appeared for many a day. It can not be criticised as a translation, for it does not even aspire to that eminence. The merit that attaches to the use of the shears in the preparation of a systematic treatise is not great. Furthermore, the work has been very carelessly done. There is no excuse for the slovenly proof-reading which is shown on page after page, especially in misspelled words.

Amid so much that is unworthy, it is refreshing to say that the book is printed on excellent clear paper and with unusually good type. These are virtues worthy of imitation by not a few publishers whose names are more pretentious than the name upon the title-page of this book.

BOOKS, ETC., RECEIVED.

The Mission of the Association of the Military Surgeons of the National Guard of the United States. By N. Senn, M. D., Ph. D., of Chicago. [Reprinted from the *Journal of the American Medical Association.*]

The Diseases of the Stomach. By C. A. Ewald, Extraordinary Professor of Medicine at the University of Berlin, etc. Authorized Translation from the Second German Edition, with Special Additions by the Author. By Morris Manges, A. M., M. D., Attending Physician to Outdoor Department, Mount Sinai Hospital, New York City, etc. With Thirty Illustrations. New York: D. Appleton & Company, 1892. Pp. xi to 497.

A Contribution to the Study of some of the Diseases peculiar to the Right Iliac Fossa; with Reference to their Relief by Surgical Treatment. By R. Harvey Reed, M. D., Mansfield, Ohio. [Reprinted from the *American Gynæcological Journal.*]

Coca and Cocaine: their History, Medical and Economic Uses, and Medicinal Preparations. By William Martindale, F. R. C. S., etc. Second Edition. London: H. K. Lewis, 1892. Pp. viii to 76.

Hepatic Abscess. Report of a Case, with Remarks on the Amœba Coli. By William A. Edwards, M. D., and J. S. Waterman, M. D., San Diego, California. [Reprinted from the *Pacific Medical Journal.*]

On Surgical Shock. By John H. Packard, M. D., Philadelphia. [Reprinted from the *Transactions of the Medical Society of the State of New York.*]

Puerperal Mastitis. By J. C. Hoag, M. D., Chicago. [Reprinted from the *Chicago Medical Recorder.*]

An Overlooked Factor in the Production of Conjunctivitis. By Julius Pohlman, M. D., Buffalo. [Reprinted from the *Buffalo Medical and Surgical Journal.*]

Pulmonary Atelectasis as a Cause of Anæmia. By Robert Abrams, M. D., San Francisco. [Reprinted from the *Transactions of the Medical Society of the State of California.*]

Report of One Hundred and Sixty-three Cases treated with the Pneumatic Cabinet. By Robert Abrams, M. D., San Francisco. [Reprinted from the *Pacific Medical Journal.*]

The Saratoga Mineral Waters. A Clinical Essay. By Thomas H. Burchard, M. D., of New York.

An Address upon the late Joseph Leidy, M. D., LL. D., his University Career. By William Hunt, M. D., Philadelphia.

The Cure of Stricture Simplified. By W. H. Dukeman, M. D., Los Angeles, Cal. [Reprinted from the *Occidental Medical Times.*]

A Neglected Case of Chronic Pleurisy. By W. H. Dukeman, M. D., Los Angeles, Cal. [Reprinted from the *Pacific Medical Journal.*]

Bacteriological and Clinical Investigations into the New Antiseptic Dermatol. By Arthur K. Stone, M. D., of Boston.

Rupture of the Aortic Valves, with Demonstration of Specimen. Aneurysms of Right Auricular Appendix. By Ludvig Hektoen, M. D., Chicago. [Reprinted from the *North American Practitioner.*]

The Pathological Anatomy of Acute Arsenical Poisoning. By Ludvig Hektoen, M. D., Chicago. [Reprinted from the *North American Practitioner.*]

Lateral Curvature of the Spine and its Association with Hernia. By S. E. Milliken, M. D., New York. [Reprinted from the *Transactions of the New York State Medical Association.*]

The Radical Cure of Inguinal Hernia—Bassini's Method illustrated. With Remarks on Recurrent and Ventral Hernia. By S. E. Milliken, M. D., New York. [Reprinted from the *Medical Record.*]

De la greffe dentaire par restitution. Nouvelles indications de le greffe; son rôle dans le service hospitalier et dans la pratique courante. Nouveau mode opératoire. Par J. Ferrier, docteur en médecine de la Faculté de Paris. [Extrait des *Bulletins de la Société de stomatologie.*]

Human Monstrosities. By Barton Cooke Hirst, M. D., Professor of Obstetrics in the University of Pennsylvania, and George A. Piersol, M. D., Professor of Histology and Embryology in the University of Pennsylvania. Part III. Illustrated with Nine Photographic Reproductions and Thirty-four Woodcuts. Philadelphia: Lea Brothers & Co., 1892.

A Successful Case of Cæsarean Section. By T. Gaillard Thomas, M. D. [Reprinted from the *Medical Record.*]

Three Cases of Cranial Surgery. I. Linear Craniotomy for Defective Mental Development. Report of a Case Thirteen Months after Operation. Decided Mental Improvement. II. Exploratory Trephining for Epilepsy. Negative Results. III. Trephining for Abscess of the Brain. Evacuation of One Ounce of Pus. Recovery. By William H. Morrison, M. D., of Holmesburg, Philadelphia. [Reprinted from the *Transactions of the Philadelphia County Medical Society.*]

Ueber das Piperazin-Erfahrungen bei Gicht und Nierensteinleiden. Mitgetheilt von Dr. Biesenthal, Arzt in Berlin. Berlin: H. Kornfeld, 1892.

Transactions of the Medical Society of the State of New York, for the Year 1892.

Transactions of the Medical Society of Virginia. Twenty-second Session, Lynchburg, Va., 1891.

Fourteenth Annual Report of the State Board of Health of the State of Connecticut, for the Year ending November 30, 1891. With the Registration Report for 1890 relating to Births, Deaths, and Divorces.

The Transactions of the Second Annual Meeting of the Association of Military Surgeons of the National Guard of the United States.

Twenty-third Annual Report of the Trustees of the Willard State Hospital, for the Year 1891.

Book on the Physician himself and Things that concern his Reputation and Success. By D. W. Cathell, M. D., Baltimore, Md. Tenth Edition. Carefully revised and greatly enlarged. (Author's Final Revision.) Philadelphia and London: The F. A. Davis Company, 1892. Pp. 343.

The Extra Pharmacopœia. By William Martindale, F. C. S., etc. Medical References and a Therapeutic Index of Diseases and Symptoms. By W. Wynn Westcot, M. B. Lond. Seventh Edition. London: H. K. Lewis, 1892. Pp. viii to 524.

Transactions of the Michigan State Medical Society. For the Year 1892. Volume XVI.

A Maid of Wolpai. By R. W. Shufeldt, M. D. [From the *Proceedings of the United States National Museum.*]

The Evolution of House-building among the Navajo Indians. By R. W. Shufeldt, M. D. [From the *Proceedings of the United States National Museum.*]

Asepsis and Antisepsis as applied in the Lying-in Chamber. By William Warren Potter, M. D., of Buffalo, N. Y. [Reprinted from the *Medical News.*]

Pelvic Inflammation in Women: a Pathological Study. By William Warren Potter, M. D., of Buffalo, N. Y. [Reprinted from the *American Gynæcological Journal.*]

Pulmonary Phthisis in its Relation to Insanity and to other Neuroses. By Thomas J. Mays, M. D., of Philadelphia. [Reprinted from the *Medical News.*]

A Case of Abscess of the Temporo-sphenoidal Lobe and of the Middle Lobe of the Cerebellum. By Frank P. Norbury, M. D., Jacksonville, Ill. [Reprinted from the *Medical News.*]

Sulphide of Calcium, or Calx Sulphurate, in Tonsillitis. By Frank P. Norbury, M. D., Jacksonville, Ill. [Reprinted from the *Therapeutic Gazette.*]

Epilepsy. By Frank P. Norbury, M. D., Jacksonville, Ill. [Reprinted from the *Transactions of the Illinois State Medical Society.*]

A Case of Athetosis Bilateralis. By Frank P. Norbury, M. D., Jacksonville, Ill. [Reprinted from the *Medical Fortnightly.*]

An Address delivered before the New York Dispensary and Hospital on the Occasion of its Twenty-fifth Anniversary, December 10, 1891. By T. Gaillard Thomas, M. D.

Practical Cerebral Localization. By Frank P. Norbury, M. D., Jacksonville, Ill. [Reprinted from the *Medical Fortnightly.*]

Report on Abdominal and Pelvic Surgery, including Thirty-two Successful Cases of Laparotomy. By William H. Wathen, M. D., of Louisville, Ky. [Reprinted from the *Journal of the American Medical Association.*]

Should not Oculists be more Careful in prescribing Colored Glasses? By W. L. Bullard, M. D., Columbus, Ga.

Bromide of Ethyl as an Anæsthetic. By E. H. Kuykendall, M. D., Chattanooga, Tenn.

The Lacerated Cervix. By W. G. Bogart, M. D., Chattanooga, Tenn.

Evolution from a Scientific Standpoint. By John Pope Stewart, M. D., Attalla, Ala.

Intracranial Aneurysm of the Carotid; Recovery. By Willis P. King, M. D., Kansas City, Mo. [Reprinted from the *Kansas City Medical Record.*]

Puerperal Phlegmasia Alba Dolens. By J. Henry Fruitnight, A. M., M. D. [Reprinted from the *New York Journal of Gynæcology and Obstetrics.*]

Perityphlitis in the Young. By J. Henry Fruitnight, A. M., M. D. [Reprinted from the *Archives of Pædiatrics.*]

Proceedings of the Third Annual Meeting of the Tri-State Medical Society of Alabama, Georgia, and Tennessee, held in Chattanooga, Tenn., October 27, 28, and 29, 1891.

Miscellany.

The Opium Habit in India.—A notable discussion on the effects of opium on the human system has taken place at two recent meetings of the Calcutta Medical Society. A full report of the discussion has been published in the form of a special supplement to the *Indian Medical Gazette*, and in the regular July issue of that journal we find the following summary of the discussion, by Dr. Crombie:

"The following propositions may be regarded as representing the gist of the discussion:

"1. That opium-eaters constitute from five to ten per cent. of the people of Bengal, and that in certain parts of India, especially Rajputana, Gujerat, Sirhind, etc., the proportion is probably much larger. In some of these parts opium assumes the position in social life and ceremonial so long granted to alcohol in other countries.

"2. That the purposes for which the opium habit is contracted are as a prophylactic against and in the treatment of malarial fever, to alleviate rheumatic pains, to cure chronic dysentery and diarrhœa, chronic bronchitis, asthma, dyspepsia, and diabetes, and very often as an aphrodisiac.

"3. That the use of small daily doses of opium is probably of distinct benefit in almost all the diseases enumerated, but especially in diabetes and as a prophylactic against malaria in damp districts; and also as enabling men to undergo prolonged muscular exertion on a small allowance of food. That it is a prophylactic also against other diseases, such as cholera, asthma, etc., was not generally admitted.

"4. That it is somewhat exceptional to begin the habit before thirty years of age, and that in the large majority it is begun between thirty and forty.

"5. That the average daily ration probably does not exceed seven grains in the mofussil (Vincent Richards), but is probably larger in towns. In 45 per cent. of the cases investigated by Dr. Ram Moy Roy the persons consumed less than twelve grains daily, and in 95 per cent. less than twenty-four grains daily. In estimating the effect of these doses, the small quantity of morphine contained in Indian opium must be kept in mind—namely, 1·5 to 7 per cent. against 10 to 21 per cent. in Turkey opium.

"6. That the moderate daily consumption of opium is compatible with good health, bodily and mental, and does not obviously tend to the production of any disease or to shorten life; 72 per cent. of the persons cited by Dr. Ram Moy Roy were over fifty years of age and 37 per cent. over sixty.

"7. That the most usual ill effects of the opium habit are hebetude, lassitude, indifference to external impressions, timidity, a tendency to neglect business, and diminution of the birth-rate; and when the quantity consumed is large, to emaciation, disorder of the bowels, and early death from some intercurrent disease. These results are, however, apparently not of frequent occurrence. It is sometimes an indirect incentive to pilfering and petty theft; but even when taken in excessive quantities it does not lead to perceptible tissue changes, to grave or violent crime, to insanity, to infringements of public decency or order, or frequently to domestic unhappiness.

"8. That the habitual use of even very large quantities (of a drachm and upward) is often compatible with the enjoyment of excellent health, the keen and successful pursuit of business, and an honored old age. Instances were referred to of men consuming a drachm of opium daily for forty years, meanwhile accumulating large fortunes; of one man who died at the reputed age of one hundred and six, in the complete possession of all his faculties and in the management of an important business, who had eaten ninety grains of opium daily for the last sixty-six years of his life; of a Sunyasi (Hindu devotee), sixty years of age, who took the incredibly large allowance of twenty-two tolahs (nine ounces and two hundred and twenty-five grains) daily without obvious ill effect.

"9. That the morphine habit is extremely rare in India, and is confined to large towns. Reference was made to a pleader who carried on his business for many years on a daily ration of ninety grains of morphine.

"10. That *chundoo* is the preparation used by Chinese in smoking opium; that it is universally smoked by Chinamen in Calcutta and also by a small and fairly well-to-do section of the native community; that the Chinamen are the healthiest, most industrious, most intelligent, and most orderly section of the community; and there does not appear to be any reason to think that *chundoo* smoking is more harmful, bodily, mentally, or morally, than tobacco smoking.

"11. That *madat* is the preparation for smoking used by the natives of lower social position. Evidence was adduced to show that *madat* smoking was capable of inducing deteriorated health in a considerable number of those indulging in it.

"12. That the misery evinced by the opium-eater when deprived of his daily ration must be largely discounted; first, because of the theatrical modes of expressing grief and misery habitual with natives on all occasions; and, secondly, because of the ease with which they can be deceived by substituting gentian, etc., for the habitual opium pill. The pleader referred to above, accustomed to ninety grains of morphine and in apparent danger of imminent death when deprived of it, was completely comforted by a bolus of flour containing ten grains of morphine on one day and by a bolus consisting entirely of flour on subsequent days.

"13. That the reduction of an opium-eater's daily ration is neither difficult nor infrequent. One of the speakers, himself an opium-eater, had, without difficulty, reduced his quantity from twenty-four to six grains daily.

"14. That the substitution of one form of intoxicant for another is not infrequent; and that obstacles placed in the way of those accustomed to eat opium would probably lead to an extended use of alcohol and *ganja*.

"15. That alcohol and *ganja* are incomparably more deleterious in their effects on the human constitution and on society than opium. Alcohol is a potent cause of tissue changes affecting the vital organs, and its abuse leads indubitably to early death. Reference was made to several families which had become extinct in Calcutta through alcohol. That it is a direct and frequent cause of crime and violence; that of one hundred persons apprehended by the police in Calcutta in a condition of intoxication, over 99 per cent. are drunk with alcohol; that it is a frequent cause of poverty, insanity, and domestic misery, and of bodily and mental weakness in the progeny. That *ganja* is an excitant of the most powerful description, leading to violent crime, to acute mania of homicidal tendency, and is the most frequent cause of chronic insanity.

"16. The figures for the lunatic asylums of Lower Bengal for the past ten years show that of 2,202 admissions, 641 were of *ganja* smokers, 117 of spirit-drinkers, and 8 only of opium-eaters. The figures for the other provinces of India show similar results."

The *Gazette* comments on the subject of the discussion as follows: "Socially, the taking of opium in India has been always the outward and visible sign of hospitality and good fellowship. Todd is mentioned by Dr. Crombie as stating that it is the form by which rival clans are reconciled and friendships declared, and an agreement ratified by this ceremony is stronger than an adjuration. It is also used on birthdays when Rajput chiefs assemble to congratulate their brother 'on another knot to his years.' Such, then, have been its social uses for hundreds of years. At the present day, Dr. K. C. Bose tells us, opium-taking is a social necessity indispensable in the reception of chiefs, nobles, and men of rank among the Rajputs, the Marwarees, and the Mohammedans of the Central Provinces, and of Surat and Ahmedabad. The ceremony of welcoming guests with opium, either in the form of decoction or highly scented extracts, is called 'Kussoba.' The children's right to the Kussoba is not denied by the host, and the observance is intended to remove anxieties from the mind and to bring about a state of hilarity. Dr. Moir drew attention to the fact that the Sikh is forbidden by his religion to take tobacco, but he likes opium in moderation; that the Mohammedan is also forbidden to drink wine or spirits, so he indulges in his modicum of opium. The custom of taking opium is accordingly one which is intimately connected with the social comforts of Mohammedans, Hindus, and Sikhs. But, in addition to its stimulating qualities which render it acceptable at social feasts, opium is evidently indulged in on account of its sustaining properties. Dr. Moir mentioned that in the last Lushai expedition the Bhutia and Goorkha coolies stipulated for opium in their rations because they were accustomed to it, because they believed it lessened fatigue in carrying heavy loads long distances, and because they thought it lessened their susceptibility to fever, and did good in fever. Dr. Moir further stated that he never saw any of these coolies suffering from any symptoms that could be attributed to eating opium, though he had seen some of them very drunk from alcohol. Dr. Davendronath Roy alluded to the Rajputs taking opium when they had much manual labor to perform, and to the custom of the soldiers of the ancient kings taking opium before battle. Under its sustaining influence the soldiers fought better, and could be exposed to sun and rain without any bad effect.

"Testimony as to the sustaining powers which opium confers on those who habitually use it is frequently come across in the older works of travels in India.

"We have on our table Mr. Grose's *Voyage to the East Indies in 1750*. Referring to the Pattamars or foot messengers who then carried letters to and fro in the different parts of India, he remarks that 'they are very expeditious in their journeys, and commonly use opium which they think fortifies them, and by this means will keep on running and dozing, as it were, at the same time with their eyes open and without feeling the fatigues of the way. . . . It is not only the Pattamars who take opium in the intention of strengthening their powers for services, but most of the hard laboring people of Surat, and especially the Hamils or porters, who make a livelihood of carrying goods to and fro from the warehouses, and will endure such loads as few of the stoutest Europeans can undertake. . . . Many of the rich and great contract a habit of it, but with different views.' He then describes how it is used to prolong sexual pleasure, and further relates that opium is considered by these people as such a specific inspirer of courage, or rather heedlessness of danger, that the commanders make no scruple of allowing it to their soldiers, especially when employed on any very perilous or desperate enterprise.

"In the course of the discussion it was further represented that opium was taken in India after a man reached forty years of age, under the belief that it checks wear and tear, and helps to conserve the bodily powers as age advances. Dr. J. N. Ghosh told of a renowned kaviraj in his quarter, himself an opium-eater, who always advised his friends and neighbors thus: 'Brother, if you wish to live long, take opium every day, and you will never get old or look older than your age. When you commence to take opium, it will be a strong prop to your life, and improve your general health.'

"It was also shown that opium is taken in India as a prophylactic against malarial fever by the inhabitants of marshy and damp districts with decided benefit. In this connection the fact was pointed out that the same habit of taking opium, as prevails in the malarial districts of India, prevails also in England in the fen districts; and both in England and India the opium is indulged in on account of its prophylactic and stimulant properties. In the ague and fen districts of Norfolk and Lincolnshire opium-eating is popular, habitual, and common, and is taken by people of all classes, especially by the poor and miserable, and by those who in other districts would seek comfort from gin or beer. The habit also appears to be common in Cambridgeshire.

"With the general prevalence of the opium habit in India and in the fen districts of England, if opium was the cause of those dire results to the constitution of the eater or smoker that the opponents of opium taking would have us believe, it is strange that medical men who reside among the people and attend them in their sickness have not observed them. It is remarkable that the opinions of medical men practicing in the fen districts of England familiar with the opium-eaters there are in direct accord with the opinions formed by medical men in India. For instance, Dr. Elliott, of Whittlesea, who has resided for many years in Cambridgeshire in the midst of the fen district where opium-eating is very common, and has had unusual opportunities of forming an opinion, considers it proved beyond all doubt that the habit is extremely common, that the quantity consumed is great, and that after all it does very little harm.

"In the discussion at the Calcutta Medical Society, Dr. Bolye Chunder Sen and Dr. A. L. Dass were the only medical men who believed they had seen ill effects on the constitution from moderate use of opium, and even their views were somewhat qualified. Dr. Sen, from his experience in the Northwestern Provinces of India, where children both of the rich and poor get small quantities of opium from early infancy, had lost his dread of administering opium to little children which he had imbibed from the lecture-room, and from the perusal of English books on the subjects. Exactly so; and if English opponents were a little more familiar with the effects of opium on the habitual opium-eater of India and elsewhere in the East, they would lose that dread which they now entertain, and which is largely imaginary. Last month we dwelt on the evidence adduced by Dr. Crombie, Dr. K. C. Bose, and Dr. Ram Roy, showing that opium in moderation did no harm, but, on the contrary, was productive of good. This month we shall give Dr. Crombie's summary of the discussion, which embodies most of the points touched on by the different members of the society. As previously stated, we do not question the earnestness of the promoters of the anti-opium movement, but we are convinced, from the evidence before us and from the views expressed to us by many medical men well acquainted with the habits of the people, that the only effect of success in the attempt to abolish opium, except for medicinal purposes, will be to raise up distrust, discontent, and anger where confidence, contentment, and good feeling should exist.

"We earnestly hope that none will be led into the error of interfering with a custom which is hallowed by ancient usage, has the sanction of some of the religious books, does an infinitesimal amount of harm to the human constitution, affects neither the morals of the individual nor the moral sense of the public, produces neither disorder nor riot, but which stands in the same relation to the East as the custom of beer- and wine-drinking to the West, is a luxury to rich and poor, is a prophylactic against malarial fever, and is a comfort and mainstay to people advancing in years."

The late Dr. Charles D. Scudder.—The medical board of the French Hospital has passed the following resolutions:

Whereas, It has pleased Almighty God to suddenly remove from our midst Dr. Charles D. Scudder, for a number of years a most valuable member of the medical board of the French Hospital in the City of New York, his former colleagues in the hospital do hereby

Resolve, That by his death the hospital has suffered a most grievous loss and will severely feel the lack of his wise counsel, his loving and faithful work, and his enthusiastic co-operation in all that tended toward improvement. And be it further

Resolved, That we, his associates in the hospital, do each and all feel that we are bereft of a personal friend whose consummate acquirements, whose loftiness of manhood, and whose deep religious faith commanded our admiration and our love. And it is further

Resolved, That in this their irreparable loss, our heartfelt sympathy is extended to all who were near and dear to him.

T. Gaillard Thomas,
Edward G. Janeway,
James E. Kelly,
[Signed.] Julio J. Henna,
W. Duncan McKim,
Egbert H. Grandin,
George G. Van Schaick.

An International Congress of Gynæcology and Obstetrics is to be held in Brussels from the 13th to the 18th of September, inclusive. Among the Americans who figure in the announcement are Dr. Robert Battey, Dr. H. F. Byford, Dr. T. A. Emmet, Dr. G. J. Engelmann, Dr. C. Fenger, Dr. W. Goodell, Dr. W. W. Jaggard, Dr. H. A. Kelly, Dr. W. T. Lusk, Dr. L. S. McMurtry, Dr. Theophilus Parvin, Dr. T. A. Reamy, Dr. C. A. L. Reed, Dr. J. F. W. Ross (Canada), and Dr. Wood. The subjects announced for discussion are: Pelvic Suppurations, Extra-uterine Gestations, and Placenta Prævia.

Quackery in Africa.—"An agent in southwestern Africa has written an account to Berlin of the present condition of quackery in that region. A year ago a foreigner went through the country carrying on his back a bag filled with plasters, wafers, and different concoctions, which he made out of anything that came at hand, and replenished as they became exhausted. He advertised himself as much as possible, and received a most enthusiastic welcome from the natives. He remained only two or three weeks in one place, and took payment in cattle, which he drove with him from place to place. When he reappeared upon the coast he had a herd of about a thousand cattle. The German agent writes that the natives, after he had left the country, found out that they had been swindled, and that it would not now be safe for any dealer in medicines to travel through the district."—*Boston Medical and Surgical Journal.*

Treatment of Wounds on the Battlefield.—"At the last meeting of the German Surgical Congress at Berlin the working of the army ambulance corps occupied a prominent place in the discussions. Langenbuch presented a paper advocating the early closure of wounds by ambulance bearers, on the ground that prompt attention would result in bringing the wounded into hospital with a portion at least of their injuries in an aseptic condition, and therefore healing by first intention would be attained to a greater extent. An opposite view was expressed by Esmarch, Trendelenburg, König, and Thiersch. They did not think that the materials used by the Red Cross men would be aseptic, to say nothing of the state of cleanliness of their hands. Thiersch concluded by saying, 'We will keep the wound open and close the discussion.'"—*Boston Medical and Surgical Journal.*

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

Original Communications.

EXCISION OF CANCER OF THE RECTUM.*

By ANDREW J. McCOSH, M. D.,
NEW YORK.

While the treatment of cancer of the rectum is not followed by brilliant results, yet it must be acknowledged that operative procedures are followed in the majority of cases by prolongation of life and alleviation of pain, and in a few cases by permanent cure. Surgery offers two plans of treatment—radical and palliative. In many of the cases which fall into the surgeon's hands radical treatment is impossible, in others it is questionable, while in a considerable number it is demanded. It is generally accepted that radical measures should be adopted in cases where the disease is confined to the lower three inches and a half or four inches of the rectum, or, in other words, when the finger can reach above the cancer, provided it has not extended to other organs. Are our operations, however, to be confined to such cases? Is there a point higher than which we must not venture, and, if there be such a limit, where is it? In cases where the disease extends higher than four inches, or where the average index finger can not reach healthy gut above it, all surgeons are not agreed as to the propriety of excision. Especially is this the case if it be certain that the peritoneal cavity must be freely opened during the operation. In such cases, even when other conditions are favorable, some surgeons advise the adoption of the palliative operation of colotomy. It is especially the English who hold this view, and they prefer to give a certain amount of temporary relief by means of a colotomy rather than subject the patient to the dangers of a high operation on the rectum. Thus Treves † says: "In no case should the peritonæum be deliberately opened, or a portion of the vagina, bladder, or prostate excised. Experience has condemned these extensive operations." Allingham ‡ expresses himself as follows: "To attempt to excise the rectum when the growth is four inches up the bowel is most unscientific and unsurgical, as it subjects the patient to great risk, and, moreover, it probably only partially removes the growth." Cripps, at the same meeting, says: "If the finger can pass sufficiently beyond the disease to feel a healthy mucous membrane so far as the height is concerned, a satisfactory removal is possible." In his further remarks he discourages operation on cases where the disease extends beyond the reach of the finger. The great majority of English surgeons hold this same view.

German surgeons, on the other hand, do not hesitate to operate on cases where the disease extends much higher than four inches and where the peritoneal cavity must be freely opened. Indeed, they would hardly be influenced by this latter fact. I do not know that there is any operation for the perfection of which we are so much indebted to our German colleagues as this very one of excision of the rectum. They certainly deserve almost the entire credit for the establishment of this operation on a proper basis.

Our American practice has not been so clearly formulated. We are perhaps in the transition stage from the conservative English to the radical German view. While the majority of surgeons in this country do not take such an extreme position as do the Germans, yet few of us would, I think, be willing to be restrained by the limits with which the English up to the present time have surrounded the operation. So little has been published on this topic that it is difficult to say just where we stand. It is certainly, however, only within the last few years that we have held such advanced views, while in Germany, as far back as 1874, stress has been laid by Volkmann and others on the good results obtained by radical treatment in cases where the disease extended high up in the rectum, and ever since their surgeons have ably maintained this position, which no doubt has influenced in a great measure our practice in this country. On account of our meager literature on this subject, it is important that all cases should be published, and for this reason I report the following five cases, which cover my experience during the past three years.

Before giving the cases in detail I shall describe in a few words the general plan of procedure followed in all five operations. A vertical incision is made in the median line from the posterior border of the anus backward as far as the tip of the coccyx, and, if necessary, extended upward as far as the middle of the sacrum. If the lower part of the rectum is healthy and does not need removal, this incision is deepened until the posterior part of the rectum is exposed. The gut is then divided across below the disease, leaving its lower segment attached to the anus. If this segment is not more than an inch or two in length, it is better to divide it with the sphincter muscles vertically through its posterior wall. In other words, prolong the original incision through the posterior border of the anus. If the lower part of the rectum is diseased and needs removal, it is left unopened and two semicircular incisions are carried around it, meeting on the perinæum in front of the anal opening. In either case a ligature is tied around the lower end of the rectum to prevent escape of fæcal matter and to be of assistance in handling the gut.

If the incision to the tip of the coccyx does not give sufficient space, then the coccyx is removed, and, if necessary, the lower part of the sacrum. The separation of the diseased rectum from neighboring tissues is then carried on until healthy gut is reached above the disease. This dissection should be mainly "blunt," and should be done by the fingers and blunt-ended scissors. If accomplished in this way, but few blood-vessels require to be clamped and still fewer ligatures to be applied. Sponge pressure, kept up for a few moments while the operator attacks another district, will generally be sufficient to control the greater part of the hæmorrhage. This is preferable to the use of artery forceps, as not only is time saved—an important detail in these operations—but also the field of operation will not be blocked by a dozen or more of artery clamps. It will sometimes be found useful to clamp a considerable amount of tissue in a large artery clamp and secure it either by a ligature *en masse* or by leaving on the clamp until the end of forty-eight hours. In an average case three to six vessels require to be secured, occasionally ten or a dozen.

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* Read before the New York Surgical Society, April 13, 1892.

† *Operative Surgery*, p. 691.

‡ *Brit. Med. Jour.*, 1889, p. 806.

When complete separation of the rectum as far as the upper limit of the cancer has been accomplished, the next step will depend upon the condition of its anal portion. If this lower segment must be removed, the entire gut is drawn down until the disease is beyond the margins of the external wound, and the rectum is then amputated at a point an inch above the upper limit of the cancer, and the cut end united by sutures to the edges of the external wound. If the lower part, with the anus and sphincter muscles, has been saved, the segment of rectum containing the cancer is resected, thus leaving a portion of healthy gut to which the lower end of the proximal portion is sutured. If the lower segment has been split, its edges can be sutured together immediately, or this may be postponed for a future operation. The external wound is then closed partially by suture, drainage being effected by tubes or iodoform gauze. If the peritoneal cavity has been freely opened, no attempt is made to close the opening by suture, but the wound below is packed with iodoform gauze.

If possible, the bowels are kept constipated for four or five days after the operation, and during this time the gauze packing is left undisturbed. After the bowels have been freely moved the gauze is taken out, the wound irrigated, and fresh gauze inserted. For several days previous to the operation an attempt is made, by repeated doses of mild cathartics, to thoroughly empty the intestinal tract, and if this has been possible there will not generally be much difficulty in preventing a movement of the bowels for five or six days following the operation.

Case I. *Excision of Four Inches of Rectum.*—Male, aged forty-nine; had enjoyed good health until a year ago, when he began to suffer pain about the anus. Since then the pain has increased, and he suffers from constipation and occasional bloody stools. For the past two months there has been marked loss of flesh and strength and obstinate constipation. On examination, a hard nodular mass is felt beginning just above the sphincter and extending upward about two inches and a half. At a point an inch and a half above the anus there is a constriction which will not admit the finger. The mucous membrane covering the growth is ulcerated.

Operation in Presbyterian Hospital in May, 1890. Ether. Lithotomy position. Sound in urethra. Vertical incision from tip of coccyx to anus, which is surrounded by two semilunar incisions. Dissection carried upward well above the cancer. Rectum drawn downward and divided three quarters of an inch above the disease at a point four inches above the anus. Cut end of rectum drawn down and fastened to margins of wound by silk sutures. Peritoneal cavity not opened. Large rubber drainage-tube behind the rectum and remainder of wound united by suture. Primary union of rectum to skin of edges of wound in part only. Wound healed in twenty-seven days and patient discharged cured. Greatest elevation of temperature, 100·5°. In March, 1892 (twenty-two months after operation), patient was in perfect health. Two movements from bowels occur daily, which he can control fairly well unless he has diarrhœa.

Case II. *Excision of Three Inches of Rectum.*—Male, aged fifty seven. History of constipation for two years. For past six months pain in rectum, blood in stools, and emaciation. On examination, ulcer on posterior edge of anus, with indurated edges and hard nodular mass extending about two inches up the rectum. Mucous membrane for lower inch ulcerated, bleeds freely, and painful to the touch. Operation, July, 1889. Incision from tip of coccyx to perinæum surrounding anus by two semicircular incisions. Dissection of rectum upward for three inches, where divided well above the cancer. Peritonæum not opened. Cancer peeled off urethra, to which it was in close approximation, but neither bladder nor urethra opened. Cut end of rectum drawn down and sutured to skin. External wound closed by sutures, except at anterior extremity, where a small drainage-tube was placed, and at posterior extremity, where a large tube was used. Tubes removed at end of forty-eight hours. Primary union of skin wounds. Slight retraction of rectum—perhaps half an inch. Patient left the hospital cured at end of four weeks. Three months later was well and had excellent control of bowels, except when he had taken a cathartic. Patient has since disappeared.

Case III. *Excision of Six Inches of Rectum.*—Female, single, aged twenty. For one year pain in rectum and obstinate constipation. During the past three months rapid loss of flesh and strength. Patient very anæmic and feeble. On examination of the rectum, on its anterior wall just above the sphincter is an oval ulcer with broad hardened base and excavated center running upward for two inches. The mass is adherent to the posterior vaginal wall. By vaginal examination, high up behind the uterus, apparently adherent to its fundus, is a hard tumor the size of a hen's egg, supposed to be a uterine fibroid.

Operation, April 16, 1891, in Presbyterian Hospital. Ether. Lithotomy position. The perinæum was divided transversely close behind the posterior vaginal wall, and, the anus being encircled, the incision was extended backward as far as the lower part of the sacrum. Coccyx excised. Lower end of rectum tied by a ligature. The lower two inches of posterior vaginal wall, where adherent to the ulcer, was left attached to the rectum. Peritoneal cavity opened in Douglas's pouch, just behind cervix uteri, and the hard mass supposed to be a fibroid was found to be a separate cancerous deposit on the rectum, slightly adherent to the uterus. The rectum was easily freed on its posterior aspect, and the mesorectum being divided for about two inches and several glands removed, the rectum was drawn downward and cut across well above the cancer at a point six inches above the anus. The cut end of the gut was sutured to the skin about the middle of the wound. The wound was sutured at the anterior and the posterior parts of the incision, and the cavity packed with iodoform gauze. The rectum united to the skin by primary union, and also the edges of the wound where sutured. She made a good recovery, and left the hospital on May 16th. The functional result was good; she had perfect control of gas and fæces under ordinary circumstances. There was no sign of local return, and for seven months she was in excellent health. She then complained of abdominal distention, the liver began to enlarge, and ascitic fluid to collect, and she died from cancer of the liver, nine months after operation. In this case colotomy would have probably given her an equal length of life, but up to the time of her death she was entirely free from local pain, and I doubt if this would have been the case had colotomy been performed instead of excision.

Case IV. *Excision of Ten Inches of Rectum; Sphincters retained, to which the Rectum was united by a Secondary Operation.*—Female, aged thirty-seven. Habitual constipation for two years. Pain in back and left side, and loss of flesh and strength during the past six months. On examination, a hard, nodular, annular stricture of rectum, two inches above the anus. Extending upward beyond the reach of the finger is a large nodular mass. Under ether the finger could not pass through the constricted portion, and in the vagina could not reach the upper limit of the tumor.

July 3, 1891.—Operation in the Presbyterian Hospital. Ether. Patient in knee-elbow position. Incision from tip of coccyx to posterior border of anus. Dissection carried down until the posterior surface of the cancerous rectum was reached. An attempt was made to leave undivided the lower inch and a half of rectum, but, in order to define the limits of the disease, the sphincters and lower inch of the rectum were divided posteriorly. The dissection was carried upward until the lower two inches and a half of the rectum were freed. At this point the tumor bulged out into each ischio-rectal fossa and was difficult to separate from the neighboring tissues. In passing the finger around the tumor to free it from its attachments on the left side, an artery was torn across and a tremendous hæmorrhage took place before the vessel could be seized by a large clamp in the midst of hardened tissue. The vessel, from the size and force of the jet, must have been abnormally large. The clamp was left *in situ*. In the mean time a ligature had been tied around the rectum just below the disease, and the gut was cut across below it, leaving the lower inch with the sphincter muscles undisturbed. This lower portion was then split vertically through its posterior border, and, remaining attached in front and at the sides, was drawn apart with the margins of the wound. To give more room, the coccyx was excised and the lower inch of the sacrum removed by cutting that bone across by bone forceps at the level of the fourth sacral foramen. The patient's condition was not good, and the remainder of the operation was done rapidly. The peritoneal cavity was freely opened, the mesorectum drawn down and divided for three or four inches, a few hardened glands removed, the rectum drawn well down and divided across above the cancer at a point eight inches above the anus. It was intended to fasten the cut end into the sphincter, which had been left attached to the skin, but the patient was suffering from so much shock that the cut end of the gut was fastened to the skin about the middle of the wound by a few sutures. The margins of the posterior part of the wound were approximated by a deep suture, and the cavity packed with iodoform gauze. No vessels had been tied, but four artery clamps were left in the wound. The patient rallied from the operation. The bowels could not be controlled, and from the third to the sixth day there was considerable elevation of temperature, but at the end of a week the condition of the patient and of the wound was satisfactory. The rectum did not unite with the skin, and its lower inch necrosed. In order to surround the lower end of the rectum with its sphincter muscle, on July 28th a second operation, under ether, was performed. There was a healthy granulating cavity through which the rectum passed, to within an inch of the skin. The wound was irrigated, the adhesions surrounding and fastening the rectum in its new position were freely broken down by the finger, and the peritoneal cavity reopened. The gut was drawn down by dividing the mesorectum still further, until its end projected well beyond the skin margin. An inch was then removed from its lower end, so as to be sure that all diseased tissue was removed. The inner surface of the sphincter muscles, which at the first operation had been left attached to the skin, was then denuded and the end of the rectum implanted within the denuded surface, and the circle of the muscle completed behind by suturing its ends together.

Deep sutures of silver wire approximated the posterior margins of the wound, the remainder being packed with iodoform gauze. The patient suffered but little from shock after the second operation. On August 23d she left the hospital, the wound being nearly healed. On September 11th the wound was completely healed. The end of the rectum had united with the sphincter muscles, and while the grip of the muscle was not perfect, yet it was sufficient to give the patient fair control over her bowels. On April 3, 1892, the patient reported she had gained thirty pounds since the operation and her general health is excellent. She has no pain and no sign of local recurrence. Except when she has loose diarrhœal movements, she exercises perfect control over her bowels. She affirms that she is as well as at any period of her life. Microscopical examination declared the tumor to be a carcinoma.

Case V. *Excision of Seven Inches of Rectum.*—Female, aged sixty-three. History of constipation for several years. For the past six months rectal pain and loose blood-stained movements. On examination, beginning an inch and a half above the anus, was an irregular, hard, nodular mass constricting the lumen of the rectum, so that the finger could not pass farther than two inches and extending upward beyond the reach of the finger into the hollow of the sacrum.

Operation, August 3, 1891, in the Presbyterian Hospital. Ether. Lithotomy position. Incision began just behind the anus and ran backward as high as the middle of the sacrum. The sphincters were found infiltrated, and two semicircular incisions were made surrounding the anus and meeting on the perinæum. The incision was still further extended through the perinæum, dividing the lower inch and a half of the posterior wall of vagina. The lower part of the rectum was tied with a silk ligature. The dissection of the rectum from neighboring tissues was difficult. In front it was adherent to the vagina, part of which was removed. Behind, the mass was adherent to the anterior surface of the sacrum as far up as the promontory. To give access to this region, the coccyx and the lower inch and a half or two inches of the sacrum were removed by cutting across the latter bone by bone forceps at the lower border of the third sacral foramen. The peritoneal cavity was freely opened, and, after dividing the mesorectum, the diseased rectum, which formed a very bulky tumor, was drawn down and the gut divided an inch above the cancer at a point about seven inches above the anus. Two large indurated masses, consisting of enlarged glands and infiltrated fat, were afterward removed. Hardened and probably diseased tissue was felt running upward and to the right, but no attempt was made to remove it on account of the condition of the patient. The cut end of the rectum was fastened by silk sutures in the center of the wound. A deep suture was inserted at the posterior part of the wound to approximate the margins. The anterior part of the wound, consisting of what remained of the vagina and perinæum, was united by suture. No vessels were ligatured, but four clamps left in position. The cavity was packed with iodoform gauze. The patient rallied well from shock. The highest temperature after the operation was 101·4°.

August 30th.—Union by secondary intention throughout the posterior part of wound. Union had been primary throughout its anterior portion.

September 15th.—Wound entirely healed and patient able to walk.

The pathologist reported that the tumor was a carcinoma.

During the operation I felt that the case was not a suitable one for excision and that colotomy would have been the wiser procedure. I formed this opinion on account of the extensive and firm adhesions of the tumor on all sides, especially at the lateral borders of the sacrum. I felt that I was working in dangerous territory and that removal of all the cancer was impossible. The subsequent condition of the patient has shown, however, that excision has given greater comfort than would have colotomy. In February (seven months after operation) the patient was alive and comparatively well. Her general health has improved and she suffers but little pain. She has, however, but very imperfect control over the rectum.

There are a number of steps in the operation about which there is considerable difference of opinion.

1. *The Incision.*—Many different methods of approach to the disease have been employed during the past century without, perhaps, much difference in the results obtained. Since, however, the plan of attacking the growth from behind rather than from below has been introduced, operations can now be performed with comparative safety which, fifteen years ago, would have been considered as unjustifiable. While the sacral method is appropriate in a considerable number of cases, yet many satisfactory operations can be done without encroaching on that bone. Of the many methods of approach, it may not be amiss to mention a few of them. The oldest method is that of Lisfranc. He made two semilunar incisions around the anus, and carried the dissection upward. Hueter made a horseshoe-shaped incision, the bow in front of the anus and the arms running backward. Separation of the gut begins in front, and it is then divided across below the disease, and the flap containing the anus and sphincter muscles thrown backward, to be replaced after excision of the diseased segment.

Velpeau made his incision from the tip of the coccyx downward through the posterior part of the anus, and the tumor can then be seen and handled from the interior of the gut.

Kocher[*] makes a long posterior incision from the coccyx to the edge of the anus, and removes the coccyx if necessary. Dissection is carried down till the posterior wall of the rectum is exposed, and the flaps are held apart by retractors. If the cancer does not involve the anus, the posterior healthy rectal wall, with the sphincters, is cut through vertically as high as the point where the gut is to be divided below the cancer. If the anus is diseased it is excised with the rectum.

The sacral methods have many distinct advantages. By adopting one or other of these, freer access is gained to the disease. The opening through which we work being larger and leading more directly to the seat of cancer, our manipulations can be carried on by sight rather than by touch. A much higher point on the rectum can be reached, even above the sigmoid flexure. If suture of the cut ends be necessary, this can be accomplished directly under the eye of the operator.

There may be disadvantages, but they are certainly more than counterbalanced by the undoubted advantages. It is alleged against the method that by it the pelvic floor is weakened, that there is greater tendency to prolapse of the bowel, and that, by disturbance of the sacral nerves, the functional control of the rectum must be lost. The first two objections, however, are largely theoretical, and even were the last a valid one, it can not be considered as important, for the control over the sphincter muscles after any rectal operation is apt to be very imperfect. In all sacral operations certain of the nerves must be divided, and it is not a matter of indifference which ones are sacrificed. In this connection it will not be amiss to make the following statements, which, I think, are correct: Division of the posterior branches of the sacral nerves is of little moment, as no important tissues are supplied by them. Division of the anterior branches of the fifth nerve is also unimportant. Division of the anterior branches of the fourth nerve, if confined to one side, is not followed by serious disturbances. Division of the anterior branches of the third nerve should be avoided, as they enter into the formation of the ischiadic plexus, and serious changes in the innervation of the pelvic organs are liable to follow injury of either of these branches.

The most prominent of the sacral methods are as follows:

1. *Kraske's Operation.*[*]—The patient is placed on the right side. The incision begins in the median line, at the middle of the sacrum, and extends downward to the anus. The soft parts being retracted from the bones, the lower part of the insertion of the left glutæus maximus muscle is loosened from the side of the sacrum. The coccyx is excised. The lower part of the sacro-sciatic is divided. The lower part of the left wing of the sacrum is then cut away with the chisel, following a bowed line which begins on the left edge of the bone, at the level of the third sacral foramen, and curves inward and downward along the lower border of this foramen, and then around (on the median side of the left fourth foramen) and down to the end of the bone. After the bone is made smooth the patient is placed in the lithotomy position, and, the tissues being retracted, the cancer is freely exposed.

2. *Bardenheuer's Method.*[†]—The patient is placed in the lithotomy position. The incision runs from the middle of the sacrum to the anus and through the sphincters. The soft parts are separated from the coccyx and lower part of the sacrum until the edges of the bone are exposed. The ligaments are divided. The sacrum is then cut transversely across, just below the third sacral foramen. The soft parts may be divided by a transverse incision on each side if more space be needed.

3. *Heineke's method*[‡] was devised because he feared that removal of so much bone would weaken the floor of the pelvis. He divides the sacrum vertically, and afterward unites the lateral halves by suture. His incision extends from the level of the third sacral foramen down below the tip of the coccyx, and from the upper end of this a transverse incision is carried outward on each side. The bones are then sawed through vertically in the median line as high as the fourth sacral foramen (found by probing), and at this point the sacrum is sawed transversely across and each half retracted. After excision of the cancer the bones are united by sutures.

4. *Kocher's Method* (reported by Arnd).—The incision

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[*] *Ctrlbl. f. Chir.*, 1874.

[*] *Arch. f. klin. Chir.*, Bd. xxxiii, p. 563.

[†] *Sammlung klin. Vorträge*, No. 298.

[‡] *Münch. med. Woch.*, 1888, No. 37.

extends in the median line from the level of the posterior superior spine of the ilium downward as far as the coccyx. On each side the soft parts are separated from the bone as far laterally as the posterior sacral foramina and as high as the third foramen. By means of the chisel a groove is then cut on each side of the sacrum along the inner edges of the foramina, beginning at the third and extending to the end of the bone. The flat segment of bone (*Knochenspange*) included between these lines and consisting of the posterior layer of the bone is then removed, which freely opens the spinal canal. The course of the sacral nerves can then be plainly seen, and they can be drawn aside, so as to be safe from injury during the operation. The sacrum and coccyx are then divided vertically in the median line, by means of a saw, as high as the third foramen, at which point the bone is divided transversely and, the important third and fourth nerves being carefully guarded, each half of the sacrum is drawn aside and the rectum freely exposed. When the diseased rectum has been removed, the lateral halves of the bone are approximated and sutured.

5. *Levy's Method.*[*]—A transverse incision is made a finger-breadth above the cornua coccygea, from each end of which incisions run downward for 8 ctm. through the glutæus magnus muscle. The ligaments are divided, and the connective tissue separated from the anterior surface of the sacrum. This bone is then cut across opposite the transverse skin incision, and the flap, in which is the lower part of the sacrum and the coccyx is drawn downward and, after the cancer has been excised, is replaced, and the bones united by suture.

This operation has been slightly modified by Delbet and by Jaennel (*Gaz. hebdom. de méd. et de chir.*, 1890, p. 569).

Methods which do not injure Bone. — Zuckerkandl[†] places the patient on the left side, and begins his incision at the tuberosity of the ilium and extends it along the left edge of the sacrum, slightly bowed toward the right, downward into the ischio-rectal space, where it ends midway between the anus and tuberosity of the ischium.

Wölfler[‡] makes a somewhat similar incision, beginning on the right side of the sacrum, a little above the coccyx, one to two centimetres external to it, and extends it downward, with a slight concavity toward the right, to near the anus, and it ends at a point on the perinæum corresponding to the posterior commissure of the vulva. This incision keeps closer to the sacrum than Zuckerkandl's, and ends nearer the perinæum.

Lange[#] advocates an operation which, in certain cases, may prove of great assistance in allowing the cut ends of the rectum to be united by circular suture. He makes his incision from one tuber ischii to the other, across the perinæum in front of the anus, and carries it deep enough to allow the whole muscular apparatus of the anus, with the lower segment of the rectum, to be pushed upward for two or three inches, so as to bring the cut ends of the gut into easy apposition. It is applicable in cases where the upper end of the rectum can not be easily brought down to the anal portion.

In cases of extirpation shall the cut end of the rectum be sutured to the skin? Many surgeons say it should not. Thus Cripps[*] says: "I consider that the risks of both peritonitis and cellulitis are greatly increased by the practice of drawing down and stitching the cut end of the bowel to the margin, for, owing to much bruised tissue, many ligatures, and the inevitable tension on the gut, primary union is most unlikely to occur." I can not agree with this view. It certainly seems to me a wise procedure to suture the rectum to the margins of the wound, and I think it should always be done. The fæcal matter will thus be guided through its proper canal to its point of exit, whereas, if the gut be left *in situ*, it will have to work its way out for three inches through a funnel the walls of which consist of a raw surface recently made in cellular tissue where a certain amount of infection is liable to occur in spite of enforced constipation, gauze packing, or frequent antiseptic irrigation. If the rectum is properly loosened above—and it is most important that this should always be done—there ought to be but little tension on the sutures. Experience has shown that it is but seldom that recession of the rectum thus fastened takes place. Arnd[†] collected 110 cases where the gut was sutured to the skin, and out of these 9 died, a mortality of 8·18 per cent. In 17 cases where the gut was not sutured 3 died, a mortality of 18·6 per cent.; but he adds 18 other cases where the same result was brought about by tearing out of sutures and escape of fæces after circular suture with 4 deaths, which brings the mortality to 20 per cent.

When the peritoneal cavity has been freely opened, how shall the opening be occluded? Shall it be carefully closed by suture or shall the cavity be simply packed with antiseptic gauze without any attempt at suture? Some surgeons prefer the first, others the second plan. The results do not seem to differ to any great extent. The complete suturing consumes valuable time, and if blood or other secretions have been left within the cavity they can not escape, and therefore drainage is less perfect than if the cavity is left unsutured and gauze packed below to shut it off from infection after the operation. If sutures are employed there is less danger, however, of after-infection. My own feeling is that the packing of the cavity with mild iodoform gauze is the safer method. Stierlin[‡] has collected 26 cases where the peritonæum was sutured, with 20 recoveries, = 77 per cent., and 26 cases where no sutures were employed, with 16 recoveries, = 61·5 per cent.

Is it wise to take special pains to preserve the lower part of the rectum? Are the results as to mortality and freedom from recurrence as good when this is done? Is the functional result decidedly better? It is not easy to answer explicitly these questions. If the lower portion of the gut is left it is necessary to unite the two ends by circular suture. These sutures are apt to tear out and then no advantage has been gained. In fully one half the cases leakage has resulted, and then an artificial anus is established and the sphincters are useless. Thus in 5 cases of suture by Billroth,* leakage resulted in 3. Arnd † collected 15 cases of circular suture, and in 8 of these the sutures tore out. More time is consumed in the operation when the circular suture is done, and, unless the functional result can be shown to be decidedly better, it seems to me that we should not be too anxious to preserve the lower part of the rectum. Heineke ‡ thinks it better to remove the lower part of the rectum on account of the liability for the sutures to tear out and because of subsequent contraction. Von Bergmann # does not deem it important to save the sphincters in the sacral operation, as he has not much faith in the future usefulness of these muscles, and he considers that the patient's chances are better when a large open funnel is left. Kocher (Arnd) also thinks it doubtful if circular suture is advisable, as in his experience more cures have followed complete extirpation. Arnd in his most valuable and elaborate paper has collected 24 cases of radical cure, and in 14 of these extirpation (amputation) had been done, in 5 excision, and in 4 resection.

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[*] *Ctrlbl. f. Chir.*, 1889, No. 13.

[†] *Wien. klin. Woch.*, 1889, Nos. 14 to 18.

[‡] *Ibid.*, Nos. 15 and 16.

[#] *N. Y. Med Jour.*, 1891, p. 309.

[*] *Brit. Med. Jour.*, October 12, 1889.

[†] *Deut. Zeitsch. f. Chir.*, Bd. 32, p. 1.

[‡] *Beiträge kl. Chir.*, 1888, p. 607.

In Case IV, recorded above, by leaving the sphincter attached to the skin and joining it around the rectum at a second operation the dangers of the circular suture were avoided, and, as far as functional result is concerned, its advantages retained.

Rehn ‖ advises the division of the operation into two stages. At the first operation he frees the diseased rectum and, packing it around with gauze, leaves it *in situ*. At the second operation, done ten days later, he removes the diseased portion and sutures the two ends together. He claims for his method less danger of shock, less danger of infection, and greater security for the circular suture.

In cases of extirpation is it better to cut through the rectum behind and insert the finger into the gut, or to ligate the lower end and remove it as a closed tube? The finger inside the gut may in some cases be of use as a guide, but, in my opinion, this advantage is more than counterbalanced by the danger of infection from the intestinal contents which are apt to escape over the wound, which is also liable to be infected by the contaminated finger and hand.

How shall infection be avoided after operation? One of the main dangers in this operation lies in the escape of fæcal matter into the cellular tissue of the pelvis, resulting in a phlegmon which, in many cases, has ended fatally. Especially is this apt to be the case after circular suture. How can we avoid the possibility of this infection? To obviate this danger various plans have been proposed. Disinfection of the intestinal contents by drugs, such as naphthol, etc., has been tried, but without success. The most rational proposal, and one which in the hands of some surgeons has given satisfactory results, is the performance of a preliminary colotomy. By this plan the intestinal contents escape before they reach the rectum, or at least the greater portion finds exit at the opening in the loin. The disadvantages are that two additional operations are imposed on the patient, for the artificial anus must afterward be closed. Are the advantages to be gained equal to the additional risk of these two operations? In extirpation I certainly think not, and I do not consider in such cases that a colotomy is at all necessary, provided the gut is sutured to the skin. The space around the rectum can be sufficiently packed with gauze to prevent infection in the great majority of cases. On the other hand, where resection and circular suture have been done, it seems to me a very proper procedure. In the greater number of these cases the passage of fæces through the rectum has caused leakage, and has often resulted in infection of the cellular tissue. If the preliminary colotomy will prevent this occurrence it will certainly be a great gain. I do not feel that there is sufficient experience as yet to decide this point. The colotomy may be made either in the right or left inguinal region. If the descending colon be attached to the abdominal wall it is apt to interfere with the necessary descent of the gut at the time of the radical operation, whereas if the ascending colon be attached, a certain amount of fæcal matter will be liable to still find its way down through the rectum. Apart from the necessity of two additional operations, this procedure is therefore not without its disadvantages.

As has been stated in many cases, radical operation is not to be considered. When the cancer is so adherent to surrounding parts that it will be impossible to completely remove it, then we must be content with palliative procedures. In cases, however, where we feel that there is a reasonable prospect that we can remove all the disease, what are the facts and reasons which should influence us in our decision between colotomy and excision? There can be no doubt but that colotomy is the safer operation of the two, so far as the death-rate is concerned, and were there in either case no prospects of cure or of long immunity from disease, then beyond question it should always be preferred to excision. Such, however, is not the case. On the one side stands an operation which, while affording no chance of permanent cure, prolongs life and makes that life a comparatively comfortable one. On the other side stands an operation which, while attended by greater danger, offers on the average a greater prolongation of life and perhaps less suffering, and in a few cases effects a permanent cure. The mortality of the radical operation is considerable—about twenty per cent.—but are we not justified in taking this large risk when we consider the disease which we seek to defeat? We are not dealing with a benign disease, but with one which can end only in a terrible death. Were the prospects of cure even less than they are, it seems to me that we would still be justified in performing the radical operation, for many patients have been given years of a comfortable existence before the relapse comes, and, even after the disease returns, the suffering is less intense than it would have been had the original trouble in the rectum been left undisturbed.

The premises on which this comparison is based are: (*a*) Excision is the more dangerous operation; (*b*) excision radically cures a certain number of cases; (*c*) excision affords greater prolongation of life; (*d*) excision may be repeated a second and third time and yet result in cure; (*e*) excision affords greater relief to the patient even when relapse occurs.

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* *Wien. kl. Wochensch.*, 1891, No. 34.

† *Loc. cit.*

‡ *Münch. med. Wochenschr.*, 1888, p. 37.

# *Berl. kl. Wochensch.*, 1889, p. 193.

‖ *Arch. f. kl. Chir.*, 1891, p. 317.

Are these premises correct?

First, the mortality. Different operators report as follows:

REPORTER.	OPERATOR.	REFERENCE.	Number of operations.	Deaths.	Mortality.	Excluding complications.
Hildebrand...	Göttingen clinic....	*Deut. Zeitsch. f. Chir.*, Bd. xxvii, p. 329.	57	20	35	24·5
Arnd.........	Kocher's clinic....	*Deut. Zeitsch. f. Chir.*, Bd. xxxii, p. 1..........	35	10	28·5	14·29
König........	König... ...	*Centralbl. f. Chir.*, Beilage 21, 1888................	60	14	24	....
Bardenheuer..	Bardenheuer.	*Centralbl. f. Chir.*, Beilage 21, 1888............ ...	13	2	15·5	....
Küster.......	Küster.......	*Berl klin. Wochenschr.*, 1889, p. 193.............	16	2	12·5	....
Billroth......	Billroth......	*Wien. klin. Wochenschr.*, 1891, No. 34............	13	2	15·5	....
Krönlein.....	....	*Correspondenzbl. f. schweiz. Aerzte*, Jan. 15, 188[illegible]................	21	2	9·5	....
Bloch........	....	*Centralbl. f. Chir.*, 1892, p. 65...................	9	2	22·2	....
Rehn........	Rehn.......	*Arch. f. klin. Chir.*, 1891, p. 317..................	7	3	42·8	....
Arnd.........	Genzmer....	*Deut. Zeitsch. f. Chir.*, Bd. xxxii, p. 1..........	17	4	23·3	11·6
Arnd.........	Kraske......	*Deut. Zeitsch. f. Chir.*, Bd. xxxii, *p.* 1..........	10	4	40	....
Arnd.........	V. Wahl.....	*Deut. Zeitsch. f. Chir.*, Bd. xxxii, p. 1..........	18	3	16·5	11·11
Arnd.........	Czerny......	*Deut. Zeitsch. f. Chir.*, Bd. xxxii, p. 1..........	25	1	4	....
Schwider.....	Bergmann...	....	46	5	11·3	6·25
Hochenegg...	Albert..	Thorndyke, in *Bost. Med. and Surg. Jour.*, vol. cxxix, p. 453............	55	6	10·9	...
Cripps........	Cripps.......	*Brit. Med. Jour.*, 1889, Oct. 12.................	30	2	7	....
Kelsey.......	Kelsey.... ..	*Stricture of the Rectum*, second edition, p. 47....	7	2	28·5	....
Total.......	....	....	439	84	19·1	....

The number of operations recorded above is 439, with 84 deaths, which gives a mortality of 19·1 per cent. No attempt has been made to collect all reported cases, but the results of several prominent operators, who have reported a series of cases, have been simply tabulated. Arnd collected 230 cases of operation, and estimated the mortality at 12·17 per cent. Welhaminow, from 335 cases, gives a mortality of 20·5 per cent. Esmarch estimates it at 20 per cent.; König, at 16 per cent.; Bardenheuer, at 10 per cent. Thorndyke computes the mortality in 88 operations by the sacral method at 14·7 per cent.; Iversen,* in 80 cases by the same method, at 25 per cent. The difference in these estimates is caused by the diversity of method of different reporters, some of whom reckon only such deaths as are caused by shock, while others include all deaths which are due directly or indirectly to the operation. The death-rate of English operators is somewhat less than that of German surgeons; but this is due to the fact that the English are much more conservative in their selection of operative cases. Thus Cripps states that only from 15 to 20 per cent. of cases are suitable for operation, while among German surgeons about 75 per cent. of all cases submit to radical operation.

It is difficult to compare this death-rate with that of colotomy, because the cases on which this latter operation is performed are, as a rule, in a much more desperate condition. The mortality, however, in cases of an equal gravity can not be more than half as great as that of the radical operation.

Second. Is a permanent cure effected, and, if so, in what proportion of cases? It is difficult to affirm that a patient is cured after operation for cancer in any organ. The period of exemption may be a long one. Most writers consider that immunity for three or four years makes the probability of a relapse so small that the great majority of such cases may be declared as permanently cured. If we take a period of four years after operation as our standard, how many patients do we find perfectly free from disease at this time?

Kocher	reports	9	cases	out of	35	operations.
Bardenheuer	"	3	"	"	45	"
Hildebrand	"	3	"	"	57	"
Czerny	"	3	"	"	45	"
König	"	3	"	"	60	"
Krönlein	"	3	"	"	22	"
V. Wahl	"	2	"	"	18	"
Von Bergmann	"	3	"	"	46	"
Genzmer	"	1	"	"	17	"
Cripps	"	2	"	"	30	"

Total....... 32 cases out of 375 operations.

This means that out of 375 patients operated on by excision, 32 were perfectly well at the end of four years. In almost all of these cases the diagnosis had been confirmed by the microscope. This proportion of permanent cures is comparatively correct. While a few of these patients may at a later period suffer from a relapse, yet out of these 375 cases a certain additional number will be cured, for many have not been operated on as long as four years ago, and therefore, while quite well at the time of report, could not be included in the number of cured. These will certainly equal, and probably exceed, the number of patients relapsing after the expiration of four years, so we may consider the figure of 11 per cent. as approximately correct. While this is not so favorable a result as is obtained after excision of the mamma or uterus, yet it certainly gives us some encouragement to persevere in our efforts to perfect the radical operation.

Many of the cases reported as cured were alive and well long after the expiration of four years. Kocher has five patients who were perfectly well more than nine years after operation, one having lived sixteen years and a half. Czerny reports a case perfectly well at the end of twelve years after operation when he excised more than five inches of the rectum. We may, therefore, say that our second premise is correct.

Third. Excision affords greater prolongation of life than does colotomy in cases where relapse occurs. Arnd reports from Kocher's 35 cases 4 patients who lived more than three years, 2 of them having lived more than five years. Hildebrand reports out of 57 operations 2 patients alive after four years, and 5 alive after two years. König reports 4 cases alive after three years. Volkmann reports 5 cases alive after three years. Almost every operator reports a certain number of patients who live from three to five years after operation and then die from a relapse.

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* *Trans. of the Internat. Med. Congress*, Berlin, 1890.

Stierlin has reckoned the average duration of life after the radical operation as 43 months, after colotomy 28·8 months. This is a longer life than is usually granted by most surgeons.

Fourth. A cure may yet result even where for repeated relapses a second and third operation has been performed on the same patient. A typical excision has been done, a relapse occurs; after several months' interval a second operation is done, followed by a third relapse and third operation, and yet a cure finally results. Thus Arnd reports a patient who had four relapses and five operations, and who was well at the end of thirty-nine months after his last operation (ninety-one months after the first excision). Turner, Volkmann, and Sihle have each reported a patient where, after three operations (two for relapses), permanent cure resulted. These and other writers have reported a number of cases where, after the second operation, for return of the growth, cure has resulted, as proved by the good health of the patients at the expiration of from five to eight years.

Fifth. Excision affords greater relief than does colotomy in cases where the cancer returns. The recurrence is generally external to the rectum, in the glands and cellular tissue of the pelvis, and therefore ulceration of the mucous membrane is less liable to occur and constriction of the caliber of the gut is less apt to result. More than this, many nerves must have been divided at the original operation, and, in consequence, the tissues are less sensitive than they otherwise would have been.

One point remains to be considered, and it is difficult to form any definite conclusions in regard to it: Are the functional results after excision better than after colotomy? What is the local condition as regards function in those patients whose rectum has been excised? What control do they have over the bowel movements? Have they absolute control (continence), or only partial control (relative continence), or is all control absent (incontinence), or does a stenosis exist?

Hildebrand [*] followed 4 cases of extirpation; there was incontinence in 3, stenosis in 1. König [†] has been able to follow 21 cases after operation; of these, 6 had so much control over their bowels that they were not annoyed by incontinence; 15 had so little control that they were made uncomfortable by the incontinence. Out of 4 cases of extirpation, there was complete incontinence in 3, stenosis in 1. In 17 cases of resection there was complete continence in 6, incomplete continence in 9, and stenosis in 2.

Out of 36 cases operated on by Cripps, [‡] in only 7 was there incontinence, while in 6 there was relative continence, and in the remainder (23) there was complete continence.

It may be stated, I think, as regards functional results, that, while the anus is situated in the natural position, yet the control over the rectum is no better than is obtained after colotomy.

While many of the assertions which have been made in the above article, especially as to the operative technique, are largely matters of opinion, yet I think the following conclusions can be reached and are approximately correct:

1. The mortality of the operation is about nineteen per cent.
2. Cases can be successfully operated on when the disease extends higher than the peritoneal attachment.
3. Certain patients are permanently cured, probably about eleven per cent. of all cases operated on.
4. In patients who have a recurrence of the disease, excision gives a longer life and a more comfortable one than does colotomy.

RESEARCHES UPON THE ÆTIOLOGY OF IDIOPATHIC EPILEPSY.

A PRELIMINARY COMMUNICATION.[*]

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(*Concluded from page 239.*)

Conclusions relating to the Occurrence of Intestinal Putrefaction in Epilepsy.—Before we undertake to point out the conclusions of be drawn from a study of the facts relating to intestinal putrefaction in the cases of epilepsy that are here presented, it is desirable to indicate the nature of the evidence on which these conclusions are based.

Before the use of scientific methods in medicine digestion was regarded wholly as a putrefactive process. Early observers, however, pointed out the error of this view. As was shown by recent investigations of Harris and Tooth,[†] normal digestion in the stomach is always free from bacterial action. But in the intestine, while the ferments of the various secretions are giving rise to those changes that are essential for the absorption of food, putrefactive processes always occur and possibly aid in digestion. The bacteria which are the immediate cause of this putrefaction are introduced with the food and escape the destructive action of the gastric juice.

This intestinal putrefaction is kept within normal limits by certain natural antiseptic conditions. The action of the bile in this direction is well known. Its power of diminishing putrescence is due chiefly to the fact that by increasing peristalsis it hastens the passage of its contents through the intestine.[‡] The acid of the gastric juice has an antiseptic action on the contents of the small intestine, as has been recently shown by Wasbutzki.[#] The tendency of mi-

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[*] *Loc. cit.*

[†] *Loc. cit.*

[‡] Butlin. *Surg. Malignant Dis.*, p. 245.

[*] Read before the American Neurological Association.

[†] *Journal of Physiology*, ix, p. 220; see also in this connection Straus and Wurtz (*Archives de méd. expérimentale*, 1890).

[‡] Ueber den Einfluss von Magengährung auf die Fäulnissvorgänge im Darmkanal. *Archiv f. experim. Pathologie u. Pharmakol.*, Bd. 26, S. 133–138.

[#] Wasbutzki found that the excretion of ethereal sulphates was increased when the secretion of hydrochloric acid in the stomach was diminished in consequence of gastric disease. He found further that in cases of hyperacidity of the stomach the excretion of ethereal sulphates was diminished. This he attributes to the action of lactic and butyric acids.

See also in this connection Biernacki (Ueber die Darmfäulniss bei cro-organisms to produce compounds which, if allowed to accumulate, would ultimately destroy their own life, is of interest in this connection.

Thus we find in the intestine, under perfectly normal conditions, two distinct kinds of ferment action by two widely different orders of ferments, which give rise to the formation of products of entirely different nature. On the one hand the unorganized digestive ferments produce changes in the food preparatory to absorption. They form from albumin, aided by the alkaline medium in which they act, successively an albuminate (alkali-albumin), albumoses, and true peptones, which latter may yield in part leucine, tyrosine, asparaginic acid, ammonia, and proteincromogen. On the other hand, the organized ferments—the bacteria—yield by their action on proteids, or on the products into which the proteids have already been transformed by the digestive action of the unorganized ferments, the following substances or classes of substances: ammonia, sulphureted hydrogen, ammonium sulphide, volatile and fatty acids, amines and amido-acids, especially leucine and tyrosine; indol, skatol, phenol, cresol, phenyl-propionic and phenylacetic acids, and the aromatic oxyacids hydroparacumaric acid and parahydroxyphenylacetic acid.[*]

The presence of these numerous acid compounds, especially of lactic acid, gives the contents of the large intestine, as a rule, an acid reaction. Further, intestinal bacteria have a fat-splitting action similar to that of the steapsin of the pancreatic juice, giving rise, however, in addition, to lower acids of the fatty series. Likewise lecithin is decomposed into glycero-phosphoric acid and the ptomaine choline, which further breaks up into carbonic acid, marsh gas, and ammonia.

Besides this long and varied list there are doubtless other substances which may result from bacterial activity in the alimentary canal, of which nothing is directly known, but which may nevertheless play an important part in the condition of the subject. It is held by some observers that the production of poisonous alkaloids in the intestine is a normal process and that these are absorbed, and, if excessive in amount, may lead to auto-intoxication. There is some evidence that this is the case in certain forms of disease.

That many of the products of intestinal putrefaction are absorbed is well known. They are, however, rapidly excreted by the kidneys, so that the individual generally escapes their poisonous action. In the urine these substances appear in but slightly modified forms, and their amount and nature may reveal the condition in the intestine. Several methods are available for estimating putrefactive changes from a study of the urine. Thus Brieger[*] estimated the quantity of phenol from the distillate of acid urine. The quantity of indigo-blue[†] which the urine yields may also serve as an index to these changes.

These methods, however, are open to objection, since they take into account only one of the many possible products of putrefaction which may be present. These products exist in the urine in combination with sulphuric acid as ethereal potassium sulphates. Thus phenol, cresol, catechol, indol, skatol, etc., which are formed in the intestine appear in the urine as phenolsulphate of potassium, cresolsulphate of potassium, catecholsulphate of potassium, indoxylsulphate of potassium, skatoxylsulphate of potassium, etc. An estimation of the amount of sulphuric acid in this ethereal combination gives, therefore, a more nearly correct indication of the amount of these substances present, and hence of the putrefaction in the intestine. Putrefactive processes outside the alimentary canal, putrid cystitis, putrid abscesses, putrid peritonitis, etc., have the same result as putrefactive processes within the intestine. The amount of the ethereal sulphates is in a general way proportional to the degree and extent of the putrefactive processes.

We may now indicate a little more fully the character of the evidence on which this relation between ethereal sulphates in the urine and putrefaction within the intestine is based.

It was at one time held that the aromatic substances in combination with the sulphate were derived directly from aromatic constituents of the food. But while this may in exceptional instances and to a limited extent be true, especially in herbivora, in the case of animals like dogs and man, who live on a mixed diet containing little or nothing of an aromatic nature, this possible origin has failed to explain the regular presence of these aromatic substances in the urine. Next, the various tissues themselves came to be regarded as the seat of their formation, and there seemed to be considerable support for this view. In starving dogs Salkowski[‡] found considerable quantities of indoxyl potassium sulphate (indican) present in the urine. Likewise, R. van der Velden[#] found the ethereal sulphates reduced only one half when the animal was kept entirely without food for five or six days. Both Ewald[‖] and Baumann,[△] however, working upon cases of intestinal fistula in man, found that

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Nierenentzündung und Icterus nebst Bemerkungen über die normale Darmfäulniss. *Deutsches Archiv für klinische Medicin*, Band 49, 1. Heft, 1891).

This author found that in cases of Bright's disease (chronic diffuse nephritis) in which the secretion of hydrochloric acid is diminished there is a corresponding increase of the ethereal sulphates in the urine.

In cases of catarrhal jaundice with complete occlusion of the bile-duct he found a similar increase in ethereal sulphates, and he regards this fact as evidence that the bile has an antiseptic action.

[*] See Haliburton, *Text-book of Chemical Physiology and Pathology*, 1891, p. 694.

[*] *Zeitschrift f. physiolog. Chemie*, Bd. 11, S. 221.

[†] This is often a very unreliable index to the degree of intestinal putrefaction, for there is no necessary relation between the amount of indican in the urine and the quantity of the ethereal sulphates. Only a small number of our cases of epilepsy in which the sulphates were in marked excess showed an excess of indican. In our experience, a large excess of indican (30 to 80 milligrammes) has been met with chiefly in cases which showed symptoms of chronic intestinal catarrh. Regarding the occurrence of indican see the following: Jaffé (*Arch. f. gesammte Physiologie*, Bd. 30, S. 483), Senator (*Ctrlbl. f. d. medicinische Wissenschaften*, No. 20–22, 1877), De Vreis (*Ueber Indican in Harn*, Kiel, 1879), Henninga (*Deutsch. Arch. f. klin. Med.*, Bd. 23, S. 271–287), Filati (*Gazzetta chimica italiana*, vol. xiii, p. 378).

[‡] *Berichte der deutsch. chem. Gesellschaft*, Bd. ix, S. 408.

[#] Ueber die Ausscheidung der gepaarten Schwefelsäuren im Harn. Virchow's *Archiv*, Bd. 70, 1872.

[‖] *Arch. f. pathol. Anat.*, Bd. 75.

[△] *Zeit. f. physiolog. Chemie*, Bd. x, 1886.

when the intestinal contents were withdrawn through the fistula the aromatic substances almost entirely disappeared from the urine. They further found that when the fistulous opening was closed and the intestinal contents were made to pass through the entire length of the intestine these substances reappeared in the urine in the usual amounts. Kühne and Nenki have shown that these aromatic bodies, especially indol, come from the putrefaction of proteids. Artificial pancreatic digestions of albumin were found to yield considerable quantities of indol, but when bacterial action was prevented by thymolization, indol and other aromatic putrefactive products were entirely absent.

Thus there is satisfactory evidence that these products, which are formed from the decomposition of proteids in the intestinal canal by the activity of micro-organisms, are absorbed, and are ultimately excreted by the urine. In confirmation of this is the influence on the separation of ethereal sulphates which is exerted by antiseptics when introduced into the intestine. As shown by Baumann[*] and Morax,[†] putrefaction can be checked in the intestine of the dog by inanition together with the administration of large doses of calomel or iodoform. Under these circumstances a concomitant disappearance of ethereal sulphates in the urine was noted. In man it is not possible to administer sufficiently large doses of these drugs to produce this result. Rovighi,[‡] working in the laboratory of Baumann, has recently shown that the administration of terpenes and camphors,[#] in the case both of men and dogs, diminished the separation of ethereal sulphates to only a moderate extent in men, but considerably in dogs. It is interesting to note in this connection that, as pointed out by Rovighi, there are variations in the separation of the ethereal sulphates at different hours of the day. Their separation is greatest during the day, more especially after meals. This fact illustrates the importance of drawing conclusions only from the examination of the twenty-four hours' urine.

The amount of putrefactive products in the urine is directly related to the amount of proteid food ingested, and it is important to consider this factor in drawing conclusions as to the degree of putrefaction that is going on. The total sulphates of the urine run parallel to the elimination of nitrogen.[‖] Hence they indicate in a general way the extent of nitrogenous metabolism, which is directly dependent on the amount of nitrogenous food absorbed. Thus, by a comparison of the sulphates in ethereal combination with the other (so-called preformed sulphates) sulphates of the urine, we have an index of the degree of intestinal putrefaction, without further consideration of the amount of proteid food ingested. It is usually stated that under normal conditions the relation between the ethereal and preformed sulphates is about one to ten.[*] But, while this may represent in general terms the normal relation, it is liable to fluctuation with the nature of the food. On a diet composed of vegetable proteids the proportion of ethereal sulphates may be somewhat increased (one to eight), while on a milk diet the ratio normally falls very much (one to twenty or less).

We may now pass to the consideration of the results obtained from the study of the products of intestinal putrefaction in our cases of epilepsy. We may begin with the examination of the *grand mal* cases, for these are greatly in the majority, and show the most pronounced deviations from the normal.

Taking first the sulphates (since, as we have seen, they are the safest general indication of the degree of intestinal putrefaction), we observe that a very large proportion of our cases show a higher ratio of the ethereal to the preformed sulphates than is observed in health. It is convenient to group the cases of *grand mal* according to the degree to which the sulphates deviate from the normal. Of the twenty-nine cases, only two (V and XX) can be called distinctly negative; six (Cases IV, VI, VII, XIII, XVII, and XXIV) are classified as doubtful, because the results are not sufficiently distinctive, either of health or disease, to enable us safely to interpret them; three (Cases VIII, XVI, and XXV) are classified as giving decided results, and all the rest, nineteen in number, as giving results that are very marked.

It is important to note that on some of the days on which the ratio of the sulphates is excessively high the total amount of ethereal sulphates is distinctly high, while in other cases it is low. Thus, in Case I, on January 21st, the ratio of sulphates is 2·7, and in Case II, on January 5th, it is 3·2. Both these ratios are very high and nearly equal, but in Case I the total ethereal sulphates are 53·3 milligrammes, while in Case II they are 16·2 milligrammes. That is, in Case I the ethereal sulphates are present in more than three times the quantity than in Case II. Is the significance of these ratios (2·7 and 3·2) approximately the same notwithstanding the great difference in the total quantities of the ethereal sulphates? In interpreting our results are we to give most weight to the ratios of the sulphates or to the total ethereal sulphates? While we ought to be guided mainly by the ratios, we must in some cases take into consideration also the totals.[†] In the instances that have been cited the ratios are so high that we can not doubt that they were caused by excessive intestinal putrefaction in both cases, for, though in Case II the total ethereal sulphates were only 16·2 milligrammes—an amount usually quite within the limits of health—we must regard this as excessively high in the presence of so small an amount of the preformed sulphates as is here present (52·5 milligrammes). This amount (52·5 milligrammes) of preformed sulphates is less than is usually observed in health, and depends on the fact that only a small amount of nitrogenous food has been assimilated. We know, however, that when the preformed sulphates are reduced to this amount in *health*, the combined sulphates are correspondingly reduced, a relation of about 1 to 10 being maintained. When, therefore, we find that the ethereal sulphates are *not* correspondingly reduced, as in Case II, we have no hesitation in pronouncing the figures distinctly abnormal.

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[*] Baumann and Wassilieff. *Zeitsch. f. physiolog. Chemie*, Bd. 6, S. 112.

[†] Bestimmungen der Darmfäulniss durch Aetherschwefelsäuren im Harn. *Zeitsch. f. physiolog. Chemie*, Bd. x, S. 318, 1886.

[‡] Die Aetherschwefelsäuren im Harn und die Darmdisinfection. *Zeitsch. f. physiolog. Chemie*, Bd. xvi.

[#] Rovighi (*loc. cit.*) experimented also with kumyss. He found that by taking 1·5 litres of kumyss daily for five days the ratio of his sulphates was reduced from 10·7 to 20. He does not state whether he took other food at this time, but it is presumed that he did. The decided influence of the kumyss is probably to be referred to the lactic acid it contains.

[‖] We have found in a large number of cases, both epileptics and non-epileptics, that the ratio of the total sulphates to the urea is singularly constant, being usually from 1 : 10 to 1 : 13.

[*] Hoppe-Seyler. Ueber die Ausscheidung der Aetherschwefelsaüren im Urin bei Krankheiten. *Zeitschr. f. physiol. Chemie.* Also R. van der Velden, *loc. cit.*, Bd. xii, S. 1, 1888.

[†] The totals vary so enormously in heathy adults (100 milligrammes to 300 milligrammes in the day) that the importance of relying on the ratios is especially impressed upon us. The establishment of a standard in health for the ethereal sulphates involves considerations very similar to those that apply to the establishment of a criterion of uric-acid excretion. See *N. Y. Med. Jour.*, June 4, 1892.

There are many instances, however, in which it is almost impossible to decide whether or not a case deviates from the normal. Thus, in Case XIII we find two ratios—11·2 and 8·7—the former certainly normal, the latter a little high, but not positively outside the limits of health. In this case the ethereal sulphates are small in amount (17·9 milligrammes for two days), and this leads one to question whether the ratio of 8·7 is to be regarded as distinctly abnormal. The case has therefore been classed with the doubtful ones.

Having established the fact that a majority of our cases give unmistakable evidence of an excessive formation of putrefactive products in the intestine, it remains to consider whether the excess of these products is or is not to be regarded as bearing a relation to the occurrence of the epileptic seizures. If in any given case in which there are evidences of excessive intestinal putrefaction a more or less constant relation exists between the degree of this excess and the frequency or character of the seizures, such a relation may reasonably be considered evidence of something more than coincidence, and the more constant the relation the more strongly does it suggest a dependence of the seizures on toxic substances produced by the excessive putrefaction in question. Before attempting any generalizations, we may advantageously take up certain cases with a view to seeing what they teach regarding such a relation.

One of the first seizures that is available for the present inquiry is that which occurred in Case I, on January 25th. On January 21st the ratio of the sulphates was higher than at any period recorded in this case—namely, 2·7; on the day of the seizure it was 4·4, and on the day after it was 7·6. The ratio on the 22d, immediately before the seizure, is unfortunately unknown. Between December 9, 1891, and January 21, 1892, there are nine estimations of the sulphates, which for this period give a ratio much nearer the normal than for the period just before and at the time of the seizure. In the six weeks mentioned there was one paroxysm only (January 2d). It is to be noted that on January 21st the amount of indican (which is regularly present greatly in excess) was 56·9 milligrammes—that is, higher than at any time between December 5, 1891, and January 23, 1892, with one exception (January 1, 1892), when the indican reached 57·3 milligrammes, but when the sulphates give a less abnormal ratio (7·9) than those above noted. On December 1st the patient began to take sodium salicylate. Between December 1st and December 8th he took fifteen grains three times daily. From December 8th until January 27th he took ten grains three times daily, the bromides being continued. On December 6th the ratio of the sulphates was 13—*i. e.*, within the normal. On December 9th it was 7·3, but the quantity of indican was very low indeed (possibly within the normal), and much lower than during October and November, when the patient was having frequent seizures (about once a week). The quantity of indican remained relatively low (as compared with October and November) until January 1st, when it rose to 57·3 milligrammes. The day following there was a mild seizure, but during the entire month of December there was not one. On the day before this seizure the sulphates gave a ratio of 7·9, a much higher ratio than the average of the days preceding. On the day of this seizure the ratio of sulphates was 6·4 and the indican 45·3 milligrammes. It is true that on January 4th there was a ratio of 3·9 and no seizure, but the indican was distinctly lower than on the days of the two seizures we have mentioned.

The patient had another seizure on February 3d. On this day the ratio was 9·1, but the ethereal sulphates were in large amount (373 milligrammes), and the indican was very high (69·5 milligrammes).

On March 31st the patient went on an almost exclusively milk diet, which had the effect of greatly reducing the ratio of sulphates and of somewhat diminishing the frequency and severity of the seizures. The seizures during this period were but imperfectly studied, and we can not safely draw conclusions from them, but it is interesting to note that the ratio for the day of the seizure of the 28th of April was 11·6. This ratio would ordinarily be regarded as belonging to health, but it is much higher than should be observed in an individual upon a milk diet (1 to 20). On May 6th the ratio was 10·6, and for the first time in our knowledge of the case indican was almost wanting. On May 9th there was a strong indican reaction, and on May 10th there was a strong indican reaction and a seizure.

In this case, therefore, there was a general correspondence between the seizures and the degree of putrefactive action in the intestine. When the salicylates were first given they exerted a check upon the products of intestinal putrefaction, and during this time seizures were absent. As soon as this antiseptic effect wore away (as shown by the reappearance of the products of putrefaction in excess) the seizures recommenced.

In Case II there was a seizure on January 5th, when the ratio of sulphates was high (3·2). On January 14th there was another seizure, and on January 12th the sulphates were again high (4·9), and a considerable amount of indican was present. On the day following the seizure the ratio of sulphates was considerably lower (7·8), and the total ethereal sulphates were less in amount than on either the 1st or 12th. Two seizures occurred on June 30th, but, as observations were made only on the 25th and the 28th (when the ratios were high—3·5 and 5·1), we can not reach any conclusion in the case of these paroxysms. A seizure occurred on February 15th, when the sulphates were not very high relatively or absolutely. In general, however, we may say that the ratio of sulphates has run unusually high in this case about the time of seizures—*i. e.*, just before or at the time of the seizures. But it is to be regretted that so few observations were made in the interparoxysmal periods.

In Case XIX we have a ratio slightly higher on the day of the seizure than on the day before or after. The total amount of ethereal sulphates was considerably higher on the day of the paroxysm than on that before or after.

In Case XXI the ratio was 5·6 on the day of the seizure, 5·9 on the day before, and 5·7 on the day after. The ethereal sulphates were slightly greater in amount on the day of the seizure and on the day before than on the day after.

In Case XXII the ratio was 5·9 on the day of the seizure, 9·9 on the day before, and 6 5 on the day after. On the day of the paroxysm the total ethereal sulphates were greater than on the day before, but about the same as the day after. The seizure in this case was a slight one, consisting of loss of consciousness and slight general tonic spasm, but without clonic spasm.

In Case XXIII the ratio was 6·6 on the day of the seizure and on the day before. On the day after it was 6·8. The ethereal sulphates were greatest in amount the day before the seizure, and were greater on the day of the seizure than on that following it. But the differences in the ratios are so slight that the case is not conclusive as regards the particular point of our present inquiry.

In Case XXIV the ratio was 4·4 on the day of the seizure, 6·6 the day before, and 11·4 the day after. The ethereal sulphates were about twice as abundant on the day of the seizure as on the day before or the day after.

In Case XXVIII the ratio was 5·0 on the day of the seizure, 4·2 on the day before, and 5·9 on the day after. The ethereal sulphates were greater in amount the day before and the day after than on the day of the seizure. It is difficult to interpret the figures in this case.

The cases of *grand mal* which have not been mentioned in the foregoing enumeration were not available for the inquiry in point, either because the seizures were too numerous, because drugs were given which are thought to affect intestinal putrefaction, or because no individual seizure was carefully studied in its relations to the interparoxysmal period.

In Cases X and XIV sodium salicylate was given in doses of ten grains three times daily (the bromides being continued) for seven days, to see whether they diminished the products of intestinal putrefaction and concomitantly the number of epileptic seizures. In Case X the results were negative in that the drug failed to exert an appreciable effect upon either the products of putrefaction or the seizures. In Case XIV, however, there was a pronounced diminution in the ratios of the sulphates at the time the drug was given and a distinct diminution in the number of seizures. But the ratio of sulphates was not brought inside the limits of the normal, and the seizures, though reduced in frequency, continued numerous.

This observation, together with that made upon Case I, shows that a reduction of the products of putrefaction by means of sodium salicylate is likely to be associated with at least a temporary reduction of the number of seizures.

It was determined to see whether it is possible to increase the products of putrefaction experimentally and concomitantly the number of seizures. For this purpose it was decided to make use of considerable doses (twenty grains) of sodium bicarbonate, it having been shown by Stadelmann * that in health the antiseptic action of the gastric juice may be diminished by alkalies, with a consequent increase of the products of intestinal putrefaction. The results of our experiments were as follows:

In Case XVI, ten grains of sodium bicarbonate, three times daily, were given for five days, and then twenty grains, three times daily, were given during five days more. During these ten days the patient had ten seizures, eight of them occurring during the first five days of the period. During the thirty days preceding this seizure the patient had eleven seizures only—*i. e.*, she had about the average number for an entire month. Reference to the table shows that during the period when the soda was given the ratio of sulphates was very greatly increased as compared with the preceding days. The total ethereal sulphates were also markedly increased, but it is interesting to note that this increase is confined to the first period of five days when the seizures were most numerous. It should be noted also that the urea excreted was very small in amount while the soda was being taken, this being due, no doubt, to the loss of appetite caused by the administration of the salt. It is possible that this greatly diminished assimilation of nitrogenous food, as shown by the diminution in urea, had a tendency to diminish the number of seizures rather than to increase them. It would be interesting to know what would have been the effect of the sodium salt upon the seizures and upon the ethereal sulphates had the assimilation of nitrogen been maintained at the level of the days preceding the experiments.

In Case XXV sodium bicarbonate was given in doses of fifteen grains, three times daily (with meals), for seven days. During this period there were two seizures—one on each of the last two days. Two consecutive seizures have not been noted before in this patient. During the period when these seizures occurred the ratios ran higher than usual, and the total ethereal sulphates were somewhat increased. In the week following the discontinuance of the sodium bicarbonate (perhaps longer) there was no seizure, and the ratios ran very nearly normal.

In Case XIV twenty grains of sodium bicarbonate were given for five successive days, soon after the administration of sodium salicylate for six days. Putrefaction was unquestionably increased, as is shown both by the total ethereal sulphates and by the ratios. The number of seizures, however, continued small. This is in direct opposition to what we should have expected. No definite conclusion can be drawn as to the effect upon seizures of the increased putrefaction induced by the administration of sodium bicarbonate, since the evidence from the three experiments is conflicting.

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* Ueber den Einfluss der Alkalien auf den menschlichen Stoffwechsel. *Bericht über die Verh. des IX. Congresses.* Abstract in *Centralblatt f. klin. Medicin*, 1890, No. 27.

The study, therefore, of our twenty-nine cases of *grand mal* shows that in twenty-one cases there was present unmistakable evidence of excessive intestinal putrefaction. Furthermore, a large proportion of the cases in which the observations were of such a character as to render a comparison possible, showed at least a general correspondence between the seizures and the degree of intestinal putrefaction as gauged by the analysis of the urine. This correspondence has been sufficiently close, in our judgment, to warrant the suspicion that intestinal putrefaction may play an important part in determining the occurrence of epileptic seizures in some cases of epilepsy—perhaps in a considerable proportion of cases. More than this we are unable to say at present, for those of our observations that relate to the concomitant variations of seizures and products of putrefaction are too few in number to permit a statement regarding epileptic seizures in general, although they appear convincing as regards most of the cases that have been studied.

We may conclude, then, that the excess in the products of intestinal putrefaction which we have noted is a characteristic of a considerable proportion of all cases of idiopathic *grand mal*, for the number of our cases is sufficiently great to exclude the possibility that our results depend on the mere coincidence of intestinal derangement and epilepsy which one might expect occasionally to meet. Nevertheless the question arises, How does it happen that so many cases of epilepsy give evidence of this abnormal condition? Is it not possible that there may be some peculiarity about the life of the epileptic which predisposes him to excessive intestinal putrefaction? Two possible sources of error in the interpretation of results suggest themselves in this connection: First, peculiarities in diet; and, second, the influence of bromides.

As regards the possible dependence of our results upon any peculiarity in the diet of our patients, it may be said that no peculiarity existed such as would account for these results. It is possible that the use of a large proportion of nitrogenous food, such as readily undergoes putrefaction (especially vegetable nitrogenous food), might bring the ratios of the sulphates within the pathological limits, but none of our cases were known to be upon such a diet. These cases were, moreover, drawn from several different sources, and it is hardly to be thought of that the same unusual dietetic condition should have been operative in each of these groups of cases. Again, in several of our cases the dietary was one which included a minimum of nitrogenous food, and these cases are among those that show the greatest deviation from the normal in the products of putrefaction. We can not, therefore, seriously entertain the idea that the diet in our cases affords an explanation of the results.

The possibility that our results may depend, in part at least, upon the influence of bromides is not so easily to be disposed of. Almost all of the cases of epilepsy were taking bromides at the time of our study and for a considerable period before, and one might hold, with some plausibility, that this circumstance invalidates the interpretation of results, since there is reason to think that long-continued, large doses of the bromides may give rise to intestinal disorder, and very possibly to excessive intestinal putrefaction.[*] As we have been able to find few epileptics in whom this possible influence of the bromides can be ruled out, it is difficult for us to give direct proof that no such influence was exerted in the cases that have been under consideration. The question really resolves itself into one of probabilities, and it is believed that the following considerations render it in the highest degree improbable that the bromides are responsible for the evidences of putrefaction that have been dwelt upon:

First. The quantity of the bromides taken in our cases was moderate (twenty to eighty grains per day—the "mixed" bromides being used in many cases), and there is no evidence that moderate doses of the drug give rise to intestinal putrefaction, either directly or indirectly, whatever may be the case with very large doses[†] (three to four drachms in twenty-four hours).

Second. As already stated, in the cases where comparison was possible the evidences of intestinal putrefaction were distinctly greater about the time of the seizures than in the intervals, notwithstanding the fact that the bromides were given in equal doses from day to day. This increase in the products mentioned at the time of seizures could hardly be explained by any known effects of the bromides.

Third. As already stated, seizures have been controlled by influences which coincidently controlled the products of putrefaction. It is impossible to explain this fact on any theory connected with the action of the bromides.

Fourth. There are among our cases of epilepsy several (IV, XXIX, and XXX) in which bromides have been taken in moderate doses for a long period of time, but in which there is no evidence of excessive putrefaction in the contents of the intestine. On the other hand, there are among the cases two (VI, XXVI) in which the patient has had no bromides for many months, but in which the putrefactive processes nevertheless run high.

In view of these facts, it must be admitted that we are unable at present to offer any explanation of the pathological conditions noted in our cases of epilepsy; we can not say why there should occur in epilepsy so considerable a proportion of cases in which there are evidences of excessive intestinal putrefaction. It is possible that future research will determine the nature and significance of the relation.

While we can not profess that we have proved that the epileptic seizure is ever the consequence of abnormal putrefactive processes in the intestine, we have at least obtained evidence which forcibly suggests that epileptic seizures are sometimes the consequence of toxic substances produced in the intestinal canal, and that the formation of these substances is related to processes of a putrefactive nature. It is of course evident that no pretense is made to having discovered the cause of epilepsy. If, as we suspect, intestinal putrefaction plays a *rôle* in the causation of some cases of epilepsy, it is certainly operative only in determining seizures, and probably acts in most cases, and perhaps in all, upon that predisposition to the excessive liberation of nerve force, either hereditary or acquired, which we must recognize as by far the most powerful factor in the causation of the disease.

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[*] Féré. Bromuration et antisepsie intestinale. *Nouvelle iconographie de la Salpêtrière*, 1890, p. 349.

[†] See Féré (*loc. cit.*).

A very interesting question presents itself in connection with the facts we have brought forward. Do cases of epilepsy which rest on an organic basis differ in any way from idiopathic cases as regards the evidence that toxic substances formed in the intestine may operate in determining seizures? Much more extended observation is necessary before this question can be answered. Yet it is of interest to note that of the three cases of *grand mal* in which there was some reason to suspect organic disease, one was negative and two were doubtful as regards the evidences of excessive intestinal putrefaction. Regarding the possibility of a difference between *grand mal* and *petit mal* there is little to be said. It should be noted that in two cases of *petit mal* where the seizures were very frequent (in one of these cases there were occasional *grand mal* seizures) there were no evidences of intestinal putrefaction, and that in a third case, in which the seizures were exclusively of the *petit mal* type, the indications were doubtful or negative.

We have made no systematic study of the influence of intestinal antiseptics in diminishing the number or modifying the character of epileptic seizures. Judging from a limited experience with salicylate of sodium, there is some reason to think that we may exert a beneficial influence, at least temporarily, upon some cases of epilepsy, by the use of drugs that are thought to control bacterial activity in the intestine. But before anything further can be said about the possibility of thus modifying the course of epilepsy in even a limited proportion of cases, it is essential that there should be carried out an extended and carefully planned series of observations upon the action of the various drugs of the class mentioned.*

Note.—It is interesting to note the large number of cases in which dark (black) urines were obtained—*i. e.*, urines which when voided appeared normal, but on becoming alkaline and on exposure to the air acquired a dark color, first forming a black zone at the exposed surface of the liquid. This appearance is known to be due to the presence of hydroquinone and pyrocatechin, two aromatic substances formed by intestinal putrefaction. Although no attempt has been made to study the urine in regard to this particular point, the formation of the dark color was noted in Cases XIV, XV, XVI, XVIII, XXI, and XXVIII. Several other cases, studied earlier, gave the same appearance, but no importance was then attached to the peculiarity.

Sulphates were determined by the Salkowski-Baumann method; urea by Pflüger's modification of Liebig's method or from the total amount of nitrogen as estimated by the Kjeldahl method; uric acid by the Ludwig-Salkowski method; indigo-blue by Jaffé's gravimetric method; phenol after the method of Koppe-schaar; and oxy acids after the manner described by Baumann.

CHOLERA AT NEW YORK, AND THE NEW YORK QUARANTINE.

A REVIEW.

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The extension of Asiatic cholera in Europe from Russia, in which country it was hoped that the disease would be confined, to various points on the continent, especially the ports of departure of the principal lines of transatlantic steamships coming to this country, presents a situation that is full of import to the quarantine and health authorities of the United States, for upon their vigilance and effective administration depends the welfare of their fellow-citizens throughout the country. From this standpoint it has seemed to be timely to review our past experience with this disease and to consider the existing measures of defense against its invasion.

It is now generally accepted that Asiatic cholera is a specific, infectious disease that is caused by the comma bacillus of Koch. It is not contagious in the same sense as small-pox or typhus fever, but in the manner of its propagation is similar to typhoid fever. The premise of a specific infection leads to the conclusion of some definite method of introduction, and the disease is chiefly propagated by the contamination of water used for drinking, cooking, and washing, by the contamination of articles of food, and possibly by the superficial inhalation and subsequent swallowing of dust containing the comma bacillus. This latter statement is based on the report of many cases of the disease the origin of which is explicable by no other tenable hypothesis.

The first recorded appearance of Asiatic cholera in this country was in 1832, when the disease may be said to have been pandemic. This was followed by the epidemics of 1833, 1834, and 1835, in which more or less extended territories were invaded. Immunity from the disease was enjoyed until 1849, when there was another pandemic that served to originate local epidemics in 1850 on the Mississippi and Ohio rivers. In 1854 the disease was again pandemic in this country, and subsequently there was no epidemic until 1866. The last epidemic was in 1873. While each of these epidemics had its *fons et origo* in India, the route that was traveled to reach America was, in the epidemics of 1832, 1849, and 1854 wholly, and in those of 1866 and 1873 partly, *via* Russia. So the disease in Europe is now following a path similar to that pursued in former epidemics, but with the disadvantage to threatened countries of greater and speedier facility for transmission that "the shrinking of the earth," as the increased means for rapid travel have been denominated, has rendered possible.

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* Some work has been done upon the influence of drugs upon the excretion of the ethereal sulphates in human subjects. Thus Ortweiler (Physiolog. und patholog. Bedeutung des Harnindicans, *Mittheil. d. Würzburger medic. Klin.*, Bd. 11, S. 153, 1888) found that in six cases of intestinal disease naphthaline had very little influence in checking putrefaction. R. Steiff (Ueber die Beeinflussung der Darmfäulniss durch Arzneimittel, *Zeitsch. f. klin. Medicin*, Bd. 16, S. 311–324) found that doses of 0·3 gramme of calomel, three times daily, did not diminish the ethereal sulphates. Equal doses of camphor caused a slight reduction in the excretion of the ethereal sulphates. Rovighi (*loc. cit.*) found that oil of turpentine and camphor exert a moderate effect on intestinal putrefaction in man. Carlsbad salts at first increased the ethereal sulphates excreted, but subsequently diminished them. Kumyss he found to exert a very marked influence in the elimination of the ethereal sulphates.

To travel rather than traffic will our quarantine officers look for danger, and the immigrant and his baggage will be much more closely observed than imported goods, excepting rags, that are always possible fomites for infectious diseases.

As it may be said of the commerce, so of the immigration into this country, the greater portion, numerically about four fifths, enters through the port of New York. But commercial supremacy has its disadvantages as well as its advantages, and in consequence of the fact I have cited the greater portion of the responsibility of excluding Asiatic cholera from this country devolves upon the quarantine and immigration officials at this port.

We may profitably inquire into the manner in which this important responsibility has been discharged in the past.

In Dr. M. Paine's letters on cholera asphyxia, as it was then termed, as it appeared at New York in 1832, it is stated that the first case appeared in an immigrant in this city on June 27th; the epidemic attained its height by July 20th, and declined again until September 1st, when it again increased. He, and other contemporary authors, believed that the disease was brought here from northern New York State, where it had been imported from Canada. The records of the quarantine station on the St. Lawrence River showing that immigrant vessels on which cholera deaths had occurred had arrived in April and May, 1832, though the first recognized cases of cholera did not appear until early in June. This theory of the Canadian origin of the New York city epidemic does not bear the light of modern investigation, although it is not denied that the Canadian immigrants distributed the disease along the great lakes.

In a work by Dr. D. Atkins * it is stated that the immigrant who was first affected had arrived in Canada in 1831, half a year before infected vessels had arrived at the St. Lawrence quarantine. He had resided in Albany from September, 1831, to May, 1832, and from May 3d had lived in New York city. Atkins states that the man was taken sick on the 25th of June, that his two children were attacked on the 27th, and that his wife became ill on the 29th. On the latter date a man living two miles from these people was taken sick with cholera, and on June 30th several cases of the disease appeared in different localities. No communication between the persons then affected, except in the case of the family, was known. Atkins states that during the winter and spring of 1832 cholera morbus and dysentery were unusually prevalent, and that several cases terminated fatally. The contemporary appearance of several cases of Asiatic cholera we now know was due to an existing local cause; and it confirms the statement of the local quarantine physician for that year, made by him almost a quarter of a century later, that cholera had arrived at this port prior to its outbreak upon the St. Lawrence, but that the board of health suppressed the facts. As it has been stated that the quarantine records for April, May, and June, 1832, are missing, the former statement seems to be confirmed. So the pandemic of 1832 was introduced as much through the agency of New York as through that of Canada.

In 1834 Asiatic cholera was again passed through the St. Lawrence quarantine in the first week in July, and from this source the United States was again infected. But Dr. C. A. Lee, in an account of the cholera in New York in 1834,* states that sporadic cases occurred during the winter and spring of that year, and about July 1st bowel complaints began to prevail extensively, although the board of health did not report cholera until August 9th, when it was stated that there had been fourteen deaths from the disease since July 23d. Again there must have been a local rather than a Canadian origin for the disease, and one that entered through the quarantine, for cholera had not remained latent since 1832, and New York city did not suffer from the epidemic of 1833 that affected particularly the Ohio and Mississippi valleys. Besides, the first case here was almost contemporary with the first case in Canada.

The epidemic of 1849 had two sources—New York and New Orleans. In the case of the first city we learn from Dr. Sterling's history of cholera at Staten Island quarantine † that a cholera-infected ship arrived at that station on December 1, 1848. The well steerage passengers were transferred to a detention building, excepting one, who, for some unexplained reason, was permitted to come to this city; and eleven cholera patients were sent to the quarantine hospital. Subsequently sixty cholera patients were sent to the hospital from the immigrants under observation, and patients in the general wards were infected through these patients being placed among them. The author naïvely states that cholera did not overleap the barriers of the quarantine inclosure, though more than one hundred immigrants scaled the walls and fled to the city; neither did the numerous visitors receive or convey it! Such an administration was sure to bring disaster, and Dr. W. P. Buel, in his remarks on the epidemic of 1849,‡ states that there were deaths from cholera in New York city during the winter of 1848–'49 of immigrants *who broke quarantine.* Dr. Sterling states that the disease reappeared at quarantine in April, and Dr. Buel that the first cases in New York city appeared May 11th, though the attending physician did not report his suspicions regarding their character to the board of health until the 14th, and when Dr. Buel visited the house on the 16th he found "a second crop" of five cholera cases, the first patient having died. The report of the sanitary committee of the board of health on cholera as it prevailed in this city in 1849 shows that from the appearance of the disease until October 13th the mortality (15,219) was double that of the preceding year, though only a third of the deaths were reported as due to cholera; but that that disease was probably reported in other ways is shown by the facts that during the period mentioned the mortality from bowel complaint was more than four hundred per cent. greater than during the preceding year, that from cholera infantum and from dysentery was doubled, that from cholera morbus was nine hundred per cent. greater, and that from diarrhœa almost two hundred per cent. greater.

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* *Reports of Hospital Physicians, and other Documents in Relation to the Epidemic of Cholera of 1832.* New York, 1832.

* *Am. Jour. of the Med. Sci.*, vol. xv, 1834, p. 256.

† *New York Jour. of Med.*, vol. iii, 1849, p. 9.

‡ *Ibid.*, vol. iv, 1850, p. 9.

Dr. Elisha Harris, in a brief paper on the introduction and spread of cholera at the Marine Hospital quarantine during the years 1853, 1854, 1855, and 1856,* stated that the records showed that cases of cholera had been admitted to the wards from shipboard immediately previous to any prevalence, or even a case, of the disease in the hospital among the patients sick of other diseases. It is to this quarantine and the cholera-exposed immigrants of 1853 that we must look for one of the sources of the epidemic of 1854. On May 29th of that year the disease first appeared in this city, though it had appeared earlier in Chicago.

The administration of quarantine was better in 1855 and 1856, for, notwithstanding the appearance of the disease, it was restricted to the hospital, though insufficient isolation failed to prevent, in each of these years, the infection of other patients in the institution.

Regarding the epidemic of 1866, the New York quarantine was again at fault, as is shown in the report of Dr. T. Swinburne on cholera at this port in the years ending December 31, 1865 and 1866.† A steamship reached here on November 2, 1865, after a passage of twenty-two days, during which time sixty cases of cholera occurred among her five hundred passengers; subsequent to her arrival forty-three more cases of the disease appeared, and she was detained twenty-eight days, the passengers not being allowed pratique until ten days after the last case appeared. Immediately after this three other vessels arrived on which cholera deaths had occurred, but no outbreak of the disease followed their arrival.

On April 18, 1866, the first cholera-infected ship appeared at quarantine, and was shortly followed by eighteen others, bringing 8,501 persons in all, of whom 604 died of cholera at sea, and 268 died in quarantine, the disease being mainly confined to the steerage passengers. According to the report of the Metropolitan Board of Health for 1866, the first case in this city occurred on May 1st, in a native of the city, who had not been exposed to the disease so far as could be ascertained; on May 2d the second case appeared in a locality remote from the first, and on May 3d the third case. Subsequently the disease became generally prevalent.

It is to be recalled that the first cases appeared while the first infected ship was still under detention at quarantine, and it is stated that coincident with her appearance there certain sudden deaths were reported to the board of health as caused by cholera. So the disease was introduced into this city and elsewhere by immigrants on the infected vessels that arrived in the winter months of 1865. It is of interest to note that, while there were only 1,212 recorded deaths from cholera in the city, the mortality was probably much greater, for the deaths from cholera morbus, diarrhœa, and dysentery were one hundred per cent. greater than the average for the preceding eleven years, and the fatal diarrhœas of every name occurred almost exclusively in the localities in which cholera was most prevalent.

Dr. Swinburne presented a comparison of the ravages of the disease at quarantine and in the city, and it is here republished without comment.

	At quarantine.	New York city.
1832	23 cases	3,512 deaths.
1849	230 "	5,071 "
1854	415 "	2,509 "
1866	608 "	1,210 "

But in 1867 our quarantine redeemed itself, for in the report to the Commissioners of Quarantine Dr. Swinburne stated that the first cholera-infected vessel arrived at this port on November 15th, and subsequently two other infected vessels arrived, in all of which there were 1,569 passengers exposed to the disease; and 200 patients with cholera were admitted to the hospital while the vessels were in quarantine, but no case of the disease appeared in the city.

Again, in 1873, when the epidemic was introduced through New Orleans, the New York quarantine demonstrated the possibility of keeping the disease out of the city, in which no case of cholera occurred. The first infected vessel arrived September 10th, and subsequently three more infected vessels arrived. From the first vessel nine persons were sent to the hospital, and on the other vessels the surgeons had restricted the disease to the persons first affected. Not a single case, beyond those mentioned, developed among the large number of persons exposed.

This city was not again threatened with the disease until 1887, when an infected steamship arrived on September 23d, followed by another about the middle of October. The writer, then on leave of absence from his station at the United States Marine Hospital at this port, was temporarily in charge of the cholera hospital, and can testify to the careful attention the quarantine physician gave to the administration of the meager, unscientific, and inadequate appliances with which the quarantine establishment was provided. Yet with even these facilities the disease was controlled at quarantine. The public press and committees from several medical societies called attention to the obsolete appliances, and as a result of this crusade the State Legislature made the appropriations necessary to equip the station more in accord with the indications of modern scientific teaching. The report of the health officer of this port for the year ending December 31, 1890, stated that the detention hospital was now properly equipped; that there was a sufficiently capacious disinfecting plant; that the surface of the island and the floors of the wards had been asphalted so as to permit flushing and to prevent their becoming receptacles for contagious matter; and that the hospital for contagious diseases had received the necessary improvements. So, if an infected vessel should arrive here, the arrest of the disease will depend upon the vigilance and capability of the quarantine officials.

In view of the large number of immigrants carried by each steamship, and the fact that there is a limit to the accommodation of the quarantine establishment, it would decrease the risk to the country and relieve the health officer of the port of great responsibility and anxiety for him to issue an order that would virtually prohibit immigration, he specifying that after a certain date all steamships carrying steerage passengers from infected ports, or from ports to which immigrants exposed to cholera might go for embarkation, would be detained three or four weeks in quarantine. Several of the first-class lines are considering the advisability of temporarily refusing to receive steerage passengers, from whom there has always been the greatest risk, and two of the lines do not now carry such passengers. So it would seem to be feasible to carry out such a plan.

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* *New York Med. Times*, vol. v, 1856, p. 329.

† *Trans. of the Med. Soc. of the State of N. Y.*, 1867, p. 249.

While it is true that on many occasions persons affected with contagious diseases have eluded the inspection of our quarantine officials, yet the facts herewith presented have shown that of the nine epidemics of Asiatic cholera that have occurred in the United States, those of 1832, 1834, 1849, and 1854 entered the country in part by the New York quarantine, though in each of these years there was an almost contemporary introduction of the disease *via* Canada or New Orleans. In 1866 the local quarantine alone was responsible for its introduction and the United States troops were responsible for its diffusion. But for the debit side of this account of five epidemics for which we must assume responsibility, there is a credit side of successful exclusion of the disease in 1855, 1856, 1867, 1873, and 1887. If, as seems probable, the disease should be brought to this port this year, the existing conditions are favorable for the possibility of adding 1892 to the credit side of the administrative account of the quarantine at the port of New York. And it would be a source of great satisfaction to the sanitarians of this country if all other exposed ports were as well equipped as the quarantine plant at this port.

166 West Fifty-fourth Street.

The American Electro-therapeutic Association will hold a meeting in New York, at the Academy of Medicine, 17 West Forty-third Street, on October 4th, 5th, and 6th. Two discussions are announced: one upon The Relative Fœticidal Value of the Different Currents and their Application to Ectopic Gestation, and another upon Cataphoresis and its Practical Application as a Therapeutic Measure. Papers are announced by Dr. G. J. Engelmann, Dr. Wellington Adams, and Dr. G. F. Hulbert, of St. Louis; Dr. W. F. Hutchinson, of Providence; Dr. Franklin H. Martin, of Chicago; Dr. A. L. Smith, of Montreal; Dr. R. J. Nunn, of Savannah; Dr. Thomas W. Poole, of Lindsay, Ontario; Dr. C. Eugene Riggs, of St. Paul; Dr. W. J. Herdman, of Ann Arbor, Mich.; Dr. D. S. Campbell, of Detroit; Dr. G. Betton Massey, of Philadelphia; Dr. Henry D. Fry, of Washington; Dr. H. E. Hayd and Dr. E. Wende, of Buffalo; Dr. J. H. Kellog, of Battle Creek, Mich.; Dr. C. G. Cannaday, of Roanoke, Va.; and Dr. W. J. Morton, Dr. A. H. Goelet, Dr. A. D. Rockwell, Dr. L. C. Gray, Dr. Robert Newman, Dr. Ephraim Cutter, Dr. Frederick Peterson, Dr. G. M. Hammond, and Dr. F. Van Raitz, of New York. Dr. J. M. Bleyer, of New York, will give a lecture, with demonstrations, entitled The Phonograph and Microphonograph, the Principles underlying them and their Uses in the Sciences. In connection with the meeting there will be an exhibition of medical electrical apparatus.

The Rush Medical College, Chicago.—Dr. Charles Warrington Earle has been elected to succeed the late Professor J. Suydam Knox as professor of obstetrics and diseases of children, and Dr. Alfred C. Cotton has been promoted to the clinical professorship of diseases of children.

THE
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NEW YORK, SATURDAY, SEPTEMBER 3, 1892.

TYPHOID FEVER AT WINTER RESORTS.

Surgeon J. S. Billings, of the army, has recently sent a letter to the *Journal of the American Medical Association* stating that a thorough investigation has been begun concerning the cases of typhoid fever that were reported last spring at St. Augustine. There were twenty-five cases of typhoid fever among 25,000 visitors to that town during the winter season of 1891 to 1892. Fourteen patients were taken sick while yet in the town, and in eleven the fever did not develop until two or three weeks after their leaving the place. There were also four hotel servants and a nurse or two who contracted the fever. As to the three great hotels of St. Augustine, there are known to have been about thirteen cases among their patrons, out of about 16,000 visitors during the season. In these thirteen cases seven of the persons were sick while yet in town, and six did not report themselves sick until after their departure from the hotels. The number of deaths by typhoid fever, so reported to the local board of health, from the 3d to the 17th of April, 1892, was four.

Dr. Billings regards it as extremely improbable that the prevalence of the fever could have been due to anything in the construction of the hotels, in the water supply, or in the ice, milk, or food; and the detailed attention given to these matters seems to make it practically certain that no case of typhoid could have been caused by any of those agencies. He states his opinion very positively that the hotels of St. Augustine will be as safe for next winter's visitors as they ever were before. Northern invalids need not hesitate about making their plans for a visit next season to St. Augustine, "with perfect confidence that, while absolute security can be had nowhere, so long as they are there they will probably be less liable to be exposed to the contagion of typhoid fever than they will be if they remain at home."

This statement of Dr. Billings's is doubly important, since it shows that a thorough investigation must be made so long as his name as a sanitary sponsor is in any wise connected with the matter, and, secondly, because the completed report, when made public over his signature, will probably be definitely instructive concerning some of the fever dangers that lie in wait for our popular winter resorts. There is abundant room for improvement and amplification in our knowledge of these matters.

MINOR PARAGRAPHS.

"DON'T BE FRIGHTENED, BUT DO BE CAUTIOUS."

So says the city board of health in its circular to the public, in view of the danger of a visitation of cholera. No better advice could be given. The cholera has not, as we go to press, yet effected a lodgment in New York, although there is a cholera ship in the lower bay; and we believe that the health officer of the port will succeed in preventing the disease from entering the city by way of the harbor. Dr. Armstrong's timely review of what the New York quarantine officers have accomplished in the past, embodied in his article published in this issue of the *Journal*, shows that much dependence is to be placed on our harbor sanitation, and Dr. Jenkins has given all possible evidence of vigilance and intelligence in the conduct of his office. His responsibility at present is grave, but he is strengthened by the confidence of the community and by the certainty that the Marine Hospital Service and the State and city boards of health are ready to co-operate with him to the utmost of their powers, which are ample; and it will be to his credit if he avails himself, as he is fully empowered to do, of their assistance.

DISINFECTION OF IMMIGRANTS' EFFECTS AT THE PORT OF DEPARTURE.

In the *Abstract of Sanitary Reports* for August 26th there is an excellent recommendation of Surgeon-General Walter Wyman's to the Secretary of the Treasury that will go into effect on the 18th proximo, that the effects of all immigrants from cholera-infected localities be thoroughly disinfected at the ports of departure by the steamship companies. In the event of failure to comply with this order, the local collectors of customs are authorized to refuse entry to the vessel. This measure should apply not only to all infected ports, but also to ports to which immigrants who had been exposed to infection might go for embarkation. While this may seem like an extraordinary measure, it is intended to meet an extraordinary occasion, the greatest vigilance being demanded to keep our country free from cholera.

THE MIDWIFERY DISPENSARY.

The continued and increasing usefulness of this institution, of which we have before spoken in commendation, is abundantly attested by the facts set forth in the Second Annual Report, for the year 1891. In 1890, the first year of its work, the dispensary furnished treatment to 199 women; in 1891 it treated 955. In those years the students serving in the dispensary numbered 62 and 243 respectively. It is announced that an agreement has been virtually arrived at by which the dispensary association will be merged with the Society of the Lying-in Hospital, which has a fund the income from which is sufficient to carry on the dispensary's work. Great credit is due the projectors of the dispensary, Dr. James W. Markoe and Dr. Samuel W. Lambert.

THE PEOPLE'S BATHS.

When, about a year ago, the New York Association for Improving the Condition of the Poor established these baths, it was feared by some of the philanthropic persons who took part in founding them that they would not be appreciated by the indigent population for whose benefit they were intended. It is gratifying to find that this misgiving—founded on experience in some large European cities—has proved groundless, for it shows that the poor of New York are not indifferent to the cleansing and refreshing action of a bath. During the year ending August 16th 56,276 baths were taken in the institution—40,455 by men, 7,575 by women, 6,203 by boys, and 2,043 by girls.

ITEMS, ETC.

The Board of Health's Circular about Cholera, issued on Tuesday, reads as follows: Healthy persons "catch" cholera by taking into their systems through the mouth, as in their food or drink, or from their hands, knives, forks, plates, tumblers, clothing, etc., the germs of the disease which are always present in the discharges from the stomach and bowels of those sick with cholera.

Thorough cooking destroys the cholera germs; therefore,

Don't eat raw, uncooked articles of any kind, not even milk.

Don't eat or drink to excess. Use plain, wholesome, digestible food, as indigestion and diarrhœa favor an attack of cholera.

Don't drink unboiled water.

Don't eat or drink articles unless they have been thoroughly and recently cooked or boiled, and the more recent and hotter they are the safer.

Don't employ utensils in eating or drinking unless they have been recently put in boiling water; the more recent, the safer.

Don't eat or handle food or drink with unwashed hands, or receive it from the unwashed hands of others.

Don't use the hands for any purpose when soiled with cholera discharges; thoroughly cleanse them at once.

Personal cleanliness, and cleanliness of the living and sleeping rooms and their contents, and thorough ventilation should be rigidly enforced. Foul water-closets, sinks, Croton faucets, cellars, etc., should be avoided, and when present should be referred to the Health Board at once and be remedied.

PRECAUTIONARY MEASURES OF TREATMENT.

The successful treatment and the prevention of the spread of this disease demand that its earliest manifestations be promptly recognized and treated; therefore,

Don't doctor yourself for bowel complaint, but *go to bed* and send for the nearest physician *at once.* Send for your family physician; send to a dispensary or hospital; send to the Health Department; send to the nearest police station for medical aid.

Don't wait, but *send* at once. If taken ill in the street, seek the nearest drug store, dispensary, hospital, or police station, and demand prompt medical attention.

Don't permit vomit or diarrhœal discharges to come in contact with food, drink, or clothing. These discharges should be received in proper vessels and kept covered until removed under competent directions. Pour boiling water on them, put a strong solution of carbolic acid in them (not less than one part of acid to twenty of hot soap-suds or water).

Don't wear, handle, or use any articles of clothing or furniture that are soiled with cholera discharges. Pour boiling water on them or put them into it, and scrub them with the carbolic-acid solution mentioned above, and promptly request the Health Board to remove them.

Don't be frightened, but *do* be cautious and avoid excesses and unnecessary exposures of every kind.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending August 30, 1892:

DISEASES.	Week ending Aug. 23.		Week ending Aug. 30.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	0	0	0	0
Typhoid fever	59	10	37	11
Scarlet fever	36	2	39	1
Cerebro-spinal meningitis	1	2	6	2
Measles	66	10	72	13
Diphtheria	46	13	64	18
Small-pox	6	2	7	2
Varicella	0	0	0	0
Whooping-cough	0	0	0	0

The American Association of Obstetricians and Gynæcologists will hold its fifth annual meeting in St. Louis on the 20th, 21st, and 22d inst., under the presidency of Dr. Albert Vander Veer, of Albany. Besides the president's address, entitled Some Considerations in Reference to Uterine Hæmorrhage, Puerperal and Non-puerperal, papers are announced as follows: Posture in Relation to Obstetrics and Gynæcology, by Dr. W. W. Potter, of Buffalo; Nephrotomy and Nephrectomy successfully performed on One Patient for Multiple Abscess, by Dr. G. S. Peck, of Youngstown; The Present Status of Obstetrics, with a Report of my own Work, by Dr. Joseph Price, of Philadelphia; The Essential Question of Drainage in Pelvic Surgery, by Dr. L. S. McMurtry, of Louisville; The Intestinal Canal as a Source of Infection in Abdominal Surgery, by Dr. W. G. Macdonald, of Albany; The Technique of Vaginal Hysterectomy, by Dr. J. H. Carstens, of Detroit; The Repair of Intestinal Lesions which occur during the Progress of Abdominal Operations, by Dr. W. E. B. Davis, of Birmingham, Ala.; The Surgical Treatment of Intestinal Wounds, by Dr. David Barrow, of Lexington, Ky.; Tetanus following Minor Gynæcological Operations, by Dr. Edwin Walker, of Evansville, Ind.; The Advantages of Version in a Certain Class of Obstetric Cases, by Dr. A. P. Clarke, of Cambridge; The Pelvic Symphyses in Pregnancy and Parturition, by Dr. W. J. Conklin, of Dayton; Embryotomy, by Dr. E. P. Bernardy, of Philadelphia; The Delivery of the After-coming Head, by Dr. W. W. Seymour, of Troy; Tumors of the Abdominal Wall, by Dr. Edward J. Ill, of Newark; Two Unusual Cases of Fibroids; Removal by Abdominal Section, by Dr. A. B. Miller, of Syracuse; Sacral Resection; its Place in Pelvic Surgery, by Dr. E. E. Montgomery, of Philadelphia; Clinical Report of Gall-bladder Operations, by Dr. R. B. Hall, of Cincinnati; Is Evolution trying to do away with the Clitoris? by Dr. R. T. Morris, of New York; The Surgical Treatment of Cancer of the Uterus, by Dr. C. A. L. Reed, of Cincinnati; Abdominal Hysterectomy, by Dr. Joseph Price, of Philadelphia; Abdominal Fixation, by Dr. F. Krug, of New York; Experiences in Abdominal Surgery on the Insane, by Dr. W. P. Manton, of Detroit; The Relation of Pelvic Disease and Psychical Disturbances in Women, by Dr. G. H. Rohe, of Catonsville; Pus in the Pelvis and Abdomen: its Diagnosis and Treatment, by Dr. Joseph Hoffman, of Philadelphia; Plastic Surgery of the Genital Tract, by Dr. T. E. McArdle, of Washington; Plastic Surgery of the Pelvic Structures, by Dr. H. O. Marcy, of Boston; Abdominal Section for Diagnosis, by Dr. Clinton Cushing, of San Francisco; Extra-uterine Pregnancy, by Dr. Edwin Ricketts, of Cincinnati; Four Cases of Ectopic Pregnancy, and the Lessons they Teach, by Dr. R. B. Hall, of Cincinnati; Ectopic Gestation; its Varieties, Symptoms, and Treatment during its Several Stages, by Dr. J. F. W. Ross, of Toronto.

Foreign Rags.—A sanitary inspector of Brooklyn is quoted as having said that "it is like flying in the face of Providence to admit the entry of foreign rags at the present time." Egyptian importations are generally the least desirable, but just at present those coming to us from Europe will bear close scrutiny.

The Orfila Prize.—The French Academy of Medicine has awarded to Dr. Kaufmann, of the Alfort Veterinary College, the Orfila prize for 1892, in recognition of his discovery that a lotion of a one-per-cent. aqueous solution of chromic acid is an almost unfailing remedy for viper-bites.

The Death of Dr. William H. Henderson, of Kingston, Ontario, professor of clinical medicine at the Royal College of Physicians and Surgeons, Queen's University, occurred on August 14th, from renal disease with thoracic complications. He was thirty-six years of age. He was a good clinical observer and an excellent teacher.

Marine-Hospital Service.—*Official List of the Changes of Stations and Duties of Medical Officers of the United States Marine-Hospital Service for the three months ending August 20, 1892:*

Bailhache, P. H., Surgeon. Granted leave of absence for fourteen days. May 25, 1892.

Purviance, George, Surgeon. Granted leave of absence for seven days. August 9, 1892.

Vansant, John, Surgeon. Granted leave of absence for thirty days. August 13, 1892.

Austin, H. W., Surgeon. Granted leave of absence for thirty days. June 21, 1892.

Stoner, G. W., Surgeon. To proceed to Port Huron, Sault Ste. Marie, Saginaw, Marquette, Mich., Duluth, Minn., and Superior, Wis., as inspector. July 11, 1892.

Mead, F. W., Surgeon. Granted leave of absence for thirty days. August 3, 1892.

Carter, H. R., Surgeon. To proceed to Chicago, Ill., as inspector unserviceable property. August 16, 1892.

Wasdin, Eugene, Passed Assistant Surgeon. Granted leave of absence for twenty-eight days. July 21, 1892.

White, J. H., Passed Assistant Surgeon. Granted leave of absence for thirty days. August 13, 1892.

Carrington, P. M., Passed Assistant Surgeon. Granted leave of absence for twenty-seven days. August 13, 1892.

McIntosh, W. B., Passed Assistant Surgeon. Granted leave of absence for thirty days. July 8, 1892.

Magruder, G. M., Passed Assistant Surgeon. Granted leave of absence for seven days. August 18, 1892.

Woodward, R. M., Passed Assistant Surgeon. Granted leave of absence for twenty-five days. August 1, 1892.

Stoner, J. B., Passed Assistant Surgeon. Granted leave of absence for twenty-six days. August 13, 1892.

Condict, A. W., Assistant Surgeon. Granted leave of absence for twenty-six days. July 21, 1892.

Hussey, S. H., Assistant Surgeon. To proceed to Galveston, Texas, for temporary duty. August 11, 1892.

Wertenbaker, C. P., Assistant Surgeon. To proceed to Pittsburgh, Pa., for temporary duty. August 9, 1892.

Perry, J. C., Assistant Surgeon. To proceed to Charleston, S. C., for temporary duty. July 19, 1892.

Smith, A. C., Assistant Surgeon. Granted leave of absence for twenty-eight days. August 13, 1892.

Rosenau, M. J., Assistant Surgeon. To proceed to Cairo, Ill., for temporary duty. July 27, 1892.

Cofer, S. E., Assistant Surgeon. To proceed to Norfolk, Va., for temporary duty. June 10, 1892. Granted leave of absence for twenty-three days. August 6, 1892.

Eager, J. M., Assistant Surgeon. To proceed to Evansville, Ind., for temporary duty. August 11, 1892.

Nydegger, J. A., Assistant Surgeon. Assigned to temporary duty at Baltimore, Md. July 6, 1892.

Stewart, W. J. S., Assistant Surgeon. To proceed to New York, N. Y., for temporary duty. July 6, 1892. To proceed to Wilmington, N. C., for temporary duty. July 19, 1892. To proceed to Savannah, Ga., for temporary duty. August 9, 1892.

Promotions.

Stoner, J. B. Commissioned as Passed Assistant Surgeon. June 30, 1892.

Guiteras, G. M. Commissioned as Passed Assistant Surgeon. July 27, 1892.

Appointments.

Nydegger, James A., M. D., of Maryland. Commissioned as Assistant Surgeon. July 1, 1892.

Stewart, William J. S., M. D., of Pennsylvania. Commissioned as Assistant Surgeon. June 30, 1892.

Proceedings of Societies.

NEW YORK SURGICAL SOCIETY.

Meeting of May 11, 1892.

The President, Dr. Arpad G. Gerster, in the Chair.

Upward Dislocation of the Hip.—Dr. L. A. Stimson presented a man, forty years old, who had been admitted to Chambers Street Hospital on March 10, 1892, with an upward dislocation of the right hip, and said that the details would be given at a subsequent meeting. A photograph showed the attitude:

slight abduction, full extension, and outward rotation of 90° of the thigh. The head of the femur could be seen and felt just beneath the skin; its upper border was an inch below the level of the anterior superior spine of the ilium, and it lay wholly outside of a line drawn directly downward from that process. Reduction was easily made by traction on the partly flexed limb and direct pressure upon the head. The patient had been in the hospital five weeks and was now well. The only mark visible was a crease in the skin where the head of the bone had nearly come through.

Transverse Perineal Incision for Prostatic Abscess.—Dr. Willy Meyer showed two patients upon whom he had practiced this method of treatment. The first, aged twenty-seven years, had been admitted to the German Hospital on the 18th of last February. He was unmarried and without venereal or tuberculous history. Eight days previous to his admittance he had taken a hot bath at night, and when he had attempted to make water at noon of the following day he had found it impossible to do so. A physician had been sent for, who had given him no relief. His urine had continued to dribble away from an over-distended bladder until he had entered the hospital, when the bladder had been emptied and washed out. Upon rectal examination, the right lobe of the prostate had been found enlarged and tender; the diagnosis of prostatic abscess had been established. A prerectal transverse perineal incision had been made and a short vertical median cut added. The fascia between the sphincter ani and bulbo-cavernosus muscle had been divided with the knife and then the gland. With one finger in the rectum and one in the wound fluctuation had been found and the abscess opened, when much pus had been discharged. The wound had been packed with iodoform gauze and had healed kindly. The patient had been discharged, cured, on April 1st.

Dr. Meyer's second case was that of a married man, fifty-seven years old, who had drank a lot of cold beer the day before he had entered the hospital. He had complained of difficulty in passing water for several years. There had been some enlargement of the prostate, with pain. The patient had remained in the hospital five days for symptomatic treatment, when he had returned home much improved; but had returned to the hospital in three days, with renewed pain in the prostate and the urine slightly purulent. Some free pus could be pressed from the urethra with the finger in the rectum. The same operation had been done as in the other case, with the same good result.

Dr. F. Kammerer had operated in several such cases by the longitudinal incision, but had also drained the bladder from the perinæum in all cases. Some of his patients had had difficulty in passing water for several days before the operation, and he did not feel assured that this condition would be relieved by the simple incision of the prostatic abscess, and catheterism, even after the operation, was in some cases impossible.

The President had operated in many such cases. When the abscess had been small and ill-defined he had usually made the transverse incision, but where the abscess had been large and well defined he had opened it through the rectum and had packed it with iodoform gauze, which he had removed in twenty-four hours. He had never seen infection from the rectum, notwithstanding Dr. Dittel's forebodings. Frequently patients so afflicted could not stand the loss of blood occasioned by the transverse incision. His patients had all been able to pass water after having been operated upon.

Dr. Meyer contended that the transverse incision need not be followed by the loss of much blood, as each bleeding point would be in sight and could easily be clamped, whereas if an artery was cut in the rectal incision, it would be very difficult to tie. His patients had had no trouble in making water after the operation; the urethral canal had not been opened in any of the cases. The speaker thought the rectal incision was always apt to be followed by septic infection.

Arthrotomy for Old Backward Luxation of the Elbow.—Dr. Hotchkiss presented a man, aged twenty-three years, who had had the luxation two months, with 170° of extension and 15° to 20° of flexion. The speaker had operated by postero-lateral incisions. The first incision had been made over the posterior aspect of the outer condyle of the humerus. All the new-formed bone had been cut away, the adhesions broken up, and the olecranon depression cleared of deposit. The second incision had been made over the posterior aspect of the inner condyle of the humerus. The ulnar nerve had been pushed aside and all the remaining adhesions had been broken up. The luxation had then been reduced and the arm had been dressed in the extended posture. When the wound had again been dressed it had been put in the flexed posture. The wound had healed kindly. After five or six weeks electricity and massage had been used, and now the motion of the arm was almost perfect.

Dr. J. A. Wyeth had operated in four cases of displacement of the caput radii due to fracture of the outer condyle during the past two years. He did not think they were so infrequently met with as had been suggested. They were often difficult of diagnosis. In these cases the diagnosis had been confirmed by incision, removal of projecting particles of bone, and reduction.

Acute Septic Inflammation of the Hip Joint with Pelvic Abscess and Iliac-Bursa Abscess; Exsection; Cure.—The President presented this case, and stated that, owing to the ignorance of the parents of the child, the history was uncertain and imperfect. The only attainable history was the following: A boy, aged seven years, was admitted to the German Hospital on November 26, 1891. He had had typhoid fever two years and a half before, which had left him with complete left hemiplegia. Five weeks before his admission he had had considerable pain in the right hip and knee, accompanied by fever. The right knee and hip were flexed, everted, and rotated outward, and there was excessive muscular rigidity. The temperature was 104° F., and the patient had had chills. In addition to the hip-joint trouble there was a large pelvic abscess. The child was much emaciated and debilitated. Uncertain as to which was the primary and which the secondary trouble, the speaker decided to first open the pelvic abscess, as that seemed most probably the primary focus. After free incision and cleansing of the pelvic abscess a thorough search failed to reveal any communication with the hip joint. The abscess cavity was packed. Great shock and collapse followed the operation. During several days the temperature went up to 106·4°, and the general condition of the patient grew steadily worse. It was then decided, notwithstanding his critical condition, to give him the last chance for life and to exsect his hip, to cleanse the joint abscess and give perfect drainage. Accordingly, as much whisky as had been deemed wise was given the child, with as little ether afterward as possible, and the joint was cut down upon over the great trochanter. When the capsule was opened a large quantity of pus escaped. The head and neck of the bone were removed, and the cavity was washed out. Examination showed this abscess to connect with an iliac bursa, and it, in turn, with the pelvic abscess. All three abscesses were packed with iodoform gauze. The fever fell and the wound healed after a large number of packings The suppuration of the hip joint had probably been primary. There was a good deal of motion in the joint at present, and it would have to be protected by an apparatus to prevent the trochanter from moving upward.

Dr. Meyer, who had had the after-treatment of this case, said he had been much pleased with the readiness with which the wound had closed. In 1889 he had operated upon a girl, twelve years old, for tubercular inflammation of the hip joint, complicated by pelvic abscess. He had exsected the head and neck of the hip joint, had cut through the acetabulum into the pelvic abscess, cleansed and packed the entire opening from the bottom. The case was completely cured, without a remaining sinus. He thought that no wound after an operation for tubercular joint disease should ever be closed with sutures, except at the knee, but packed with gauze to the very bottom.

Operative Treatment in Diseases and Injuries of the Spinal Cord and Spine.—Dr. Wyeth showed a case of Pott's disease which had been treated for two years and a half with the plaster-of-Paris jacket and Taylor's brace. The disease had progressed until there had been complete paraplegia, the bowels and bladder both having been involved. He had removed the laminæ of the fourth, fifth, and sixth dorsal vertebræ, opened the dura, and found the cord compressed by a lot of tubercular material, which he had removed. The wound had been thoroughly cleansed and the dura and the external wound closed. After two months the patient (a newsboy) had begun to improve, and was now able to walk, run, and go through all ordinary movements of the lower extremities. The functions of the bladder and rectum were normal.

Dr. Wyeth related the histories of three cases of fracture of the spine in which he had operated. The first was that of a man, twenty-two years of age. In 1890 the patient was struck by the pilot of a locomotive and fractured the second lumbar vertebra and had been immediately paralyzed from that point down. Two years later the speaker had removed the eleventh and twelfth lumbar arches, and found the cord compressed by dislocation of the body of the second lumbar vertebra; he had removed the compressing bone and closed the wound. Six hours later improvement had begun and now the patient, though far from being perfectly well, was able to get about and had been greatly improved by the operation.

Second case, 1891.—Fracture in the dorsal region; operation; unimproved.

Third case, 1891.—Fracture of the seventh and eighth dorsal vertebræ; operation; unimproved.

Dr. C. K. Briddon thought an operation in spinal caries was beneficial; as for fractures, nearly all cases were complicated by dislocation which could not be reduced so as to relieve tension and pressure. However, he advised an explorative operation in all those cases in which there appeared a justification, as no harm could be done if the operation was carefully performed with all the antiseptic precautions.

Dr. J. D. Bryant said all these cases were very interesting to him, and, while not wishing to detract in any way from the glory in Dr. Wyeth's particular case of caries, he said he had never yet seen a case of paraplegia from Pott's disease which had not recovered without operation.

Subclavio-axillary Aneurysm; Cure.—Dr. Bryant presented the case of a man, forty years old, who had had syphilis. A year before, he had begun to have pain in his right biceps, which a little later on had involved the whole arm. The patient had first been seen by Dr. Bryant in November, 1891, through the kindness of Dr. J. H. Ripley. There had then been found a small tumor at the junction of the axillary and subclavian arteries. The patient was placed in bed, on limited diet, for a week. The next two weeks he was given thirty grains of potassium iodide daily. Then the use of the iodide was omitted for a week and had been continued at interrupted intervals to allow the patient's stomach a chance to recover from the irritability caused by the drug. Each time the speaker had passed through the ward he had made pressure with the finger on the artery for two or three minutes. One day he noticed the pulsation of the aneurysm had disappeared, but, upon turning the patient's head to the right or left, the pulsation had again been observed. Each time he had observed the tumor after this the pulsation had been less noticeable. The patient had now been cured. What had cured him Dr. Bryant was unable to say, but he thought the remedies just alluded to should first be tried before ligation of the subclavian was attempted, as the mortality after ligating this artery had been extremely large.

Dr. Wyeth agreed with Dr. Bryant that the operation of ligating the subclavian should be delayed until pressure of some kind had been faithfully tried. He took this occasion to record an error into which he had fallen in mistaking a cystic neuroma which developed in the sheath of one of the contributing nerves to the brachial plexus. It was afterward removed successfully by operation. It included in its grasp half the surface of the subclavian artery, and showed a marked impulse with the cardiac systole.

Facial Phlegmon.—Dr. C. A. Powers showed a patient upon whom he had operated for this affection on March 22d. The trouble had commenced as a small swelling at the middle of the left half of the upper lip. Twenty-four hours afterward Dr. Vaughan had been called in. During the succeeding twenty-four hours the swelling rapidly increased, accompanied by a chill and fever. At this time Dr. Powers was called in consultation. He found a brawny, diffuse swelling involving the lip and running upward to the lower margin of the orbit; the surrounding tissues were much inflamed; the patient had symptoms of general infection. Incisions were made through the swelling and the diseased tissue was removed as far as possible. The wound was washed with a 1-to-500 bichloride solution, afterward with a solution of zinc chloride, and dressed antiseptically. The patient had made a good recovery.

Dr. Powers brought the patient forward as illustrating a class of cases which, if not interfered with, rapidly went on to sepsis, meningitis, and death. Early, extensive, and thorough dissection would usually save the patient if the process was not too far advanced.

Dr. L. S. Pilcher had seen two cases of a very similar nature in the Methodist Hospital in Brooklyn. Both had been advanced cases and the patients had died of meningitis. Another patient, where the infection had begun at the angle of the jaw on the right side and had extended around the front of the neck to the angle of the jaw on the left side, had been saved by operation. The speaker thought that an early operation was the only thing to be done in such cases. Their ætiology, he thought, would form a very interesting field of bacteriological research. At present the disease was involved in much obscurity.

The President said that at a meeting which he had recently attended an old gentleman had asserted that he had never seen a patient die from such affections when poultices had been used. It was needless to say that he did not agree with this gentleman. An early and extensive incision was the only thing to do.

Intestinal Anastomosis.—Dr. Kammerer showed a specimen from a case in which he had done lateral anastomosis without rings, according to the method recently advocated by Dr. Abbe. The patient, a woman, thirty-five years old, had come under his care about a year ago suffering from a gangrenous abscess of the right groin. After several operations had been performed a fæcal fistula in the colon had finally been brought to light, in connection with an abscess in the iliac fossa. All attempts to close the fistula having proved useless, a resection of an inch of the ileum and three inches of the cæcum had been made, including the fistulous opening in the beginning of the colon. Circular enterorrhaphy had been resorted to, the sutured gut had been returned to the abdominal cavity, and an iodoform tampon introduced to that point where the gut had no peritoneal covering, corresponding to the attachment of the mesocolon. All had gone well during the following ten days, but then it was found that the intestinal sutures had given way at the point just mentioned, and an opening into the gut which barely admitted a probe was the result of this. This opening had gradually increased in size, notwithstanding all efforts to close it. Finally, two months after the first operation, the speaker had performed lateral anastomosis without plates. The operation had been a tedious one, the adhesions between the intestines and the omentum being very extensive and firm, which fact made it difficult to secure enough free gut at this point for the anastomosis. An incision three inches long had been made in each portion of the bowel, and the anastomosis completed by two rows of continuous sutures on each side of the incisions, supplemented by a suture of the cut edges of the bowel. The openings had not been button-holed, as specified by Dr. Abbe; still the result, as the specimen showed, had been a very good one. Since the speaker had become acquainted with Dr. Abbe's method of closing the wound surfaces of the incised gut by button-holing he should always employ it hereafter, because it greatly facilitated the remainder of the operation and effectually checked the hæmorrhage from the intestinal walls. The patient had done very well at first. She had gained considerably in weight, but four months later had succumbed to extensive pelvic caries. The specimen showed an anastomosis two inches and a half in length; the openings in the bowel had scarcely contracted at all.

Book Notices.

Text-book of the Eruptive and Continued Fevers. By John William Moore, B. A., M. D., M. Ch., Univ. Dubl., Physician to the Meath Hospital, Dublin, etc. William Wood & Co., 1892. Pp. xxv to 535.

The author disclaims any intention of presenting this work as a competitor of Murchison's treatise on the continued fevers, but it has seemed to him well to present that subject with a study of the eruptive fevers, collecting the most recent views on the ætiology, bacteriology, and pathology, with the symptoms and treatment of these groups of disease. As a pupil of William Stokes, the author has been especially attracted to the study of fevers, and his keen appreciation of the importance of his subject is shown by his statement: "There is no other disease which demands on the part of the physician a closer and more intelligent observation, a more minute and searching physical examination, a more subtle and refined train of reasoning, a more careful weighing of evidence for or against, and a more conscientious and painstaking management from start to finish."

The introductory chapters treat of the intimate nature of fever, the intimate nature of contagion, micro-parasitic diseases, and the preventive and curative treatment of the eruptive and continued fevers. We think that in these, as in some other chapters, the author may confuse the student, for whom the work is primarily intended, by his quotation of differing theories. For instance, it is far from being even moderately accepted by physicians that Cantani's resurrection of Boerhaave's and Borsieri's theory of the value of fever as a therapeutic agent has a well-founded scientific basis. On page 14 the German terms *leptotriches*, etc., have been employed instead of the usual English form. On the same page the statement "true parasitic micro-organisms do not exist outside the living body" is more than misleading. And, again, on page 17 there is the erroneous statement that the contagium of some of the infective diseases does not seem to be capable of retaining an independent existence outside the animal body, instancing those of syphilis, gonorrhœa, glanders, and hydrophobia, in the first three of which there are well-authenticated instances of transmission of the disease by mediate contagion. On page 18 the author has accepted the faulty observations of Celli and Marchiafava rather than those of Laveran, that show conclusively that the hæmatozoon is reproduced in the animal body. We do not believe that bacteriologists accept Liebermeister's supposition that the contagium of enteric fever, cholera, or influenza does not propagate outside the body without undergoing some further change. On page 20, under the head of epidemics, the author cites a pandemic that belongs under the latter head, on the following page.

The second portion of the work treats of the exanthemata, and the third of the continued fevers. The description of these diseases is very full, and the author has cited numerous authorities regarding theories, pathological facts, or therapeutical resources, adding to these a careful and comprehensive statement of the results of his own observations.

The work has been written in a transition period in medical science, and apparently very few years more will produce discoveries that will expand the five pages on infection and immunity to a considerably greater volume; the very subjects of which the author has treated will be those most affected by future research. The few errors we have noted are comparatively immaterial in the mass of good work that the author has done, and we do not doubt that many will welcome and be instructed by the collation of facts and experience he has presented.

Recherches cliniques et thérapeutiques sur l'épilepsie, l'hystérie et l'idiotie. Compte rendu du service des enfants idiots, epileptiques et arriérés de Bicêtre pendant l'année 1890. Par Bourneville, médecin de Bicêtre, avec la collaboration de MM. Camecasse, Isch-Wall, Morax, Raoult, Seglas et P. Sollier, internes et anciens internes du service. Volume XI. Avec 16 figures dans le texte et 10 planches. Paris: Vve. Babe et cie., 1891. [Publications du *Progrès médical.*] Pp. c–3 to 252. [Prix, 6 francs.]

The first portion of this work is devoted to the history of the service at the Bicêtre during the year 1890, and it is prefaced by a division of the patients into three groups. The first includes idiot children, filthy idiots, epileptic or non-epileptic, but invalid; the second group has the same divisions as the first, but the children are healthy; and the third includes children that are healthy, imbecile, backward, epileptic, and hysterical. The first class is subdivided into two categories: first, children that can not speak or walk, but are susceptible of amelioration by being submitted to certain exercises, such as standing by the aid of parallel bars or walking in a wheeled baby-supporter, as well as by flexion, extension, and friction of the limbs; second, incurable idiots that are the object of ordinary hygienic care. The second class comprised two hundred and thirteen children, of whom four died, six were discharged, twelve were passed to a higher class, five were transferred to the adult division, and two were transferred elsewhere. The remaining one hundred and eighty-four were divided into those that used a spoon only (forty-five), those that used a spoon and fork (ninety-one), and those that used a spoon, a fork, and a knife (forty-eight). The total population was three hundred and ninety-three.

The method of education consists in teaching the child ordinary cleanliness, then to attend to the necessities of the toilet, and to obtain command over the hands and fingers; gymnastic exercises; training in how to employ the senses; walking and interrogation regarding objects seen. Then the children are taught to sing, to draw lines, and gradually to write. The better behaved are taken on excursions to the various points of interest in and about Paris.

When admitted, the children are photographed, and this is repeated at intervals of two or three years; a record is thus preserved of the changes in the patients for better or worse.

Eight trades are taught in the institution. The number of apprentices during the year varied from one hundred and eighty-seven to one hundred and eighty-three, and the value of their labor was almost thirty thousand francs. There is an interesting table of mortality, giving the age, disease, cause of death, and remarks on the family history.

There is a report on the Vallée endowment, with the statistics of that service.

A second portion of the volume is devoted to seven reports on interesting cases of idiocy and hysteria in the male. The third part includes a paper on the anatomico-pathological classification of idiocy, one on microcephalia, one on porencephalism, and one on myxœdematous idiocy.

This volume gives evidence of the great patience and thought that are expended in securing amelioration in the condition of an unfortunate class, as well as a scientific study of the factors that tend to create such a class. If at the present day science has deemed worthy of study the possibility of training the anthropoid apes to render useful and intelligent service to man, or the cries of animals as a means of understanding these expressions of their emotions, how much more worthy is the effort to awaken intelligence in these poor simulacra of mankind!

On Contractions of the Fingers (Dupuytren's and Congenital Contractions) and on "Hammer-toe." Including Two Essays on Dupuytren's Contraction of the Fingers, and its Successful Treatment by Subcutaneous Divisions of the Palmar Fascia, and Immediate Extension. One Essay on Congenital Contraction of the Fingers and its Association with Hammer-toe; its Pathology and Treatment. One Essay on the Successful Treatment of Hammer-toe by the Subcutaneous Division of the Lateral Ligaments. And One Essay on the Obliteration of Depressed Cicatrices after Glandular Abscesses, or Exfoliation of Bone, by a Subcutaneous Operation. By William Adams, F. R. C. S. Eng. With Eight Plates and Thirty-one Wood Engravings. Second Edition. London: J. & A. Churchill, 1892. Pp. xx to 154.

In this edition the author has added a paper read before the Medical Society of London in which he gives a *résumé* of Keen's and Abbe's work in Dupuytren's contraction. He advocates the subcutaneous operation in all cases, but we do not think that it is fair to modern surgery to assume the probability that results obtained by the open-wound operation in 1863 will be repeated in 1892, and many excellent surgeons do not believe that it is unnecessarily severe, or that it involves either a long or a tedious reparative process, with the risk of suppurative inflammation. The author still holds to the gouty origin of Dupuytren's contraction, apparently agreeing with Keen that Abbe's theory of its nervous origin is only true in so far as gout or rheumatism may be of nervous origin.

The incorporated papers on congenital contraction of the fingers, on hammer-toe, and on the obliteration of depressed cicatrices advocate subcutaneous division of the fascial bands in he first-mentioned condition, of the lateral ligaments in the second, and of the cicatrix in the third.

We would call attention to a slight error in plate iv. Fig. 2 is stated to represent the same hand shown in Fig. 1, but the latter is a right and the former a left hand. So with Figs. 4 and 3; the hands are not the same. Probably Figs. 2 and 4 are transposed.

Atlas of Clinical Medicine. By Byrom Bramwell, M. D., F. R. C. P. Edin., F. R. S. Edin., Assistant Physician to the Edinburgh Royal Infirmary. Vol. I. Part IV. Edinburgh: T. & A. Constable, 1892. Pp. 141 to 184.

The present part completes the first volume of this superb work. It deals chiefly with small-pox and globulinuria. A few pages are devoted to Friedreich's ataxia and to the description of pictures of patients with various forms of melancholia and mania. The article on small-pox is especially good. A better and more lucid description of the eruption in its different stages can not be found in literature. The plates are fully equal in excellence to those accompanying the three preceding parts. The volume now complete is certainly one of the most valuable contributions to clinical medicine of recent years.

Diseases of the Nervous System. By J. A. Ormerod, M. D. Oxon., F. R. C. P. Lond., etc. With Numerous Illustrations. Philadelphia: P. Blakiston, Son, & Co., 1892.

The author of this little volume assures us that he does not offer it as a substitute for the elaborate treatises on this subject which exist, but only as an introduction and an outline map. In point of merit, it is very good—better than many of similar nature. It contains much accurate information, condensed, yet clearly given, and creditably fulfills the author's purpose.

The Book of Prescriptions, containing upward of 3,000 Prescriptions collected from the Practice of the most Eminent Physicians and Surgeons, English and Foreign; comprising also a Compendious History of the Materia Medica, Lists of the Doses of all Official or Established Preparations, and an Index of Diseases and Remedies. By Henry Beasley. Seventh Edition. Philadelphia: P. Blakiston, Son, & Co., 1892. Pp. xx to 599.

This extensive title embraces fully the character of the book. The drugs are alphabetically arranged and several formulæ comprising various combinations are given under the name of each drug.

Books of this kind serve a purpose when properly employed.

BOOKS, ETC., RECEIVED.

Geographical Pathology: an Inquiry into the Geographical Distribution of Infective and Climatic Diseases. By Andrew Davidson, M. D., F. R. C. P. Ed., Late Visiting and Superintending Surgeon, Civil Hospital, and Professor of Chemistry, Royal College, Mauritius. Part I. Europe, Northern and Western Asia, India, Ceylon, Burmah. Part II. Southwestern Asia, Indian Archipelago, Australia and Polynesia, Africa, America. New York: D. Appleton & Co., 1892. Pp. xiii to 1005. Price, $7.50.

A Text-book of Morbid Histology for Students and Practitioners. By Rubert Boyce, M. B., M. R. C. S., Assistant Professor of Pathology in University College, London. With One Hundred and Thirty Colored Illustrations. New York: D. Appleton & Co., 1892. Pp. xxiv to 477.

A Practical Treatise on Diseases of the Skin. By John V. Shoemaker, A. M., M. D., Professor of Skin and Venereal Diseases in the Medico-chirurgical College and Hospital of Philadelphia, Physician to the Philadelphia Hospital for Diseases of the Skin, etc. Second Edition, revised and enlarged. With Chromogravure Plates and other

Illustrations. New York: D. Appleton & Co., 1892. Pp. xi to 878. Price, $5.

A Case of Fracture of and Dislocation between the Tenth and Eleventh Dorsal Vertebræ, with Presentation of Patient. By Albert L. Bouffleur, M. D., Chicago. [Reprinted from the *Chicago Medical Recorder.*]

The Metschnikovian Theory of Vital Resistance. By J. Wellington Byers, M. D., Charlotte, N. C. [Reprinted from the *Climatologist.*]

Ueber den Einfluss der in den Magen eingeführter Säuren und Alkalien auf die Alkalescenz des menschlichen Blutes und auf die Reaction des Harns. Inaugural-Dissertation zur Erlangung des Doctorgrades der medicinischen Facultät zu Bern vorgelegt von A. Freudberg. [Separatabdruck aus Virchow's *Archiv für path. Anat., etc.*]

Experimentelle Beiträge zur Therapie der Magenkrankheiten. Aus der medicinischen Klinik in Bern. Inaugural-Dissertation zur Erlangung der Doctorwürde einer hohen medicinischen Facultät der Universität Bern vorgelegt von Hugo Henne. [Sonder-Abdruck aus der *Zeitschrift für klin. Medicin.*]

Zur Behandlung der Pleura-Empyeme mittelst Punctions-Drainage. Inaugural-Dissertation zur Erlangung der Doctorwürde der hohen medicinischen Facultät der Universität Bern vorgelegt von Adolf Eberle.

Proceedings of the Florida Medical Association. Session of 1892.

Miscellany.

Medicine and the Church.—The *Lancet* for August 13th contains the following editorial article:

To denounce the Church, particularly the mediæval Church, for its antagonism to rational medicine is an easy task—so easy, indeed, that the denunciation has long been one of the *loci communes* of positivist rhetoric. True enough, the ecclesiastical mind, both before and after the Renaissance, studied Nature and Nature's laws from the schoolmen's travesty of Aristotle. It eyed with more than suspicion the lay practitioner who dared to look disease in the face and who, having satisfied himself that it was neither more nor less than a departure from health conditions rationally observed, set himself to treat it accordingly. It is also true that the Church opposed to this appeal to natural law its invocation of the saints, and that it sought by the dearly purchased intervention of these mediators to cure the sick—a practice which put money into its purse and riveted its hold on the popular imagination. Equally true is it that it saw, or professed to see, in lunacy or epilepsy only demoniacal possession, and that it preyed upon the superstitious relatives of patients so visited by claiming the power to exorcise the demon and by exacting heavy fees for the operation. That it encouraged personal uncleanliness is also true—indeed, the encouragement is not yet extinct, for only a few years ago it canonized one Labbé, of Boulogne, for no other apparent reason than that ages ago he had "crucified the flesh" by leading the life of a hog in such places as the arches of the Coliseum in Rome. Not, indeed, till sounder views of Nature and of the mode of interpreting her aright arose with Galileo, Bacon, and Descartes did the Church abate her pretensions to supernatural cure and allow rational medicine, though with a bad grace, to pursue its course unfettered. All this, we repeat, is a more than thrice-told tale—become so tiresome by repetition that a reaction in favor of the Church has for some time set in, and historians of medicine (like Haeser and Puschmann) have been at pains to show wherein the healing art is indebted to the Church, and how all denunciations of her undue pretensions ought to be tempered by an equally strong exposition of the blessings she has conferred. We have been led to write in this strain by an article contributed to the *Albemarle Review* by the Rev. Alfred Momerie, D. D., wherein he inveighs against the mediæval Church for her attitude toward medicine, in apparent forgetfulness, if not ignorance, of what the ecclesiastical—aye, and even the medical—apologist can say or has said in her vindication. Against his unrelieved invective we might quote the brilliant chapter in Puschmann's *History of Medical Education*, which puts in the strongest and most convincing light the revolution in the estimate of man and of human nature wrought by the Church. A patient in the "valetudinaria servilia" of heathen Rome was cared for and cured, not out of brotherly love, but out of his owner's reluctance to part with a negotiable chattel, which might yield him gain, either by service or by sale. Not so the Christian view. The growth of its essentially humanitarian spirit lies at the root of hospital creation and extension in the modern sense; and few chapters in the history of medicine are more instructive and at the same time more romantic than those in which a Haeser or a Puschmann traces the rise and spread of these beneficent institutions to the brotherly love as enjoined by the Church. The *Storia della Medicina* of the great Tuscan physician and jurist, Francesco Puccinotti, devotes many pages to proving how much that was sound in ancient medicine owed its rescue and conservation to fathers of the Church who were also, like S. Basil founders of hospitals and indirectly therefore creators of the modern clinique. Not till patients were massed and grouped on the scale represented by the mighty infirmary at Cæsarea was the observation of disease adequate for the purposes of pathological and therapeutic induction; not, in a word, till the multiplication of hospitals which followed that typical anticipation of the modern institution was the foundation of clinical research and practice properly laid. In taxing the Church with her baneful influence on medicine, the Rev. Dr. Momerie tells us but half the truth, leaving it to the medical historian to make good his omission and to enable the impartial reader to "look on *this* picture and on *that.*" Curious are the developments of modern polemical literature when an able and accomplished ecclesiastic like Dr. Momerie indulges in an unrelieved indictment against the Church's demeanor toward medicine, and when the defense of the Church proceeds from medically trained apologists whose historic fairness forbids their ignoring the blessings it has conferred on their art.

Hospitals for Infectious Diseases.—The *British Medical Journal* for August 13th prints a report of an interesting discussion on Some Points in Connection with Hospitals for Infectious Disease that took place at the recent meeting of the Section in Public Medicine of the British Medical Association.

Dr. H. T. Bulstrode, assistant medical officer of the Southwestern Fever Hospital, London, in introducing the subject, dealt with certain circumstances which impaired the popularity and effectiveness of hospitals for infectious disease.

1. Wooden or corrugated iron huts, which it was impossible to keep warm in winter, put up hastily and imperfectly under stress of an epidemic, and which constantly required, but seldom obtained, repair were often the only provision made. It might be that the building was of brick, but it consisted, perhaps, of a couple of ill-ventilated cottages situated next door to the cemetery, and presided over by a "Mother Gamp."

2. Occasionally the unpopularity was apparently due to the proximity of the building to the workhouse, and its consequent association with pauperism and disgrace. An excellent instance of the deterren effects of pauperism was to be found in the history of the Metropolitan Asylums Board. Prior to 1887 a relieving officer's order was necessary in order to obtain admission into the board's hospitals, and the consequence was that only a very small proportion of those attacked with scarlatina applied for admission. This restriction was in 1887 removed and since that date a much wider use had been made of the hospital provision.

3. It was undesirable that any charge should be made for admission into the general wards of a fever hospital. Graduated payments produced distinction and jealousies. It was expedient to provide, if possible, separate accommodation for the wealthier classes, but this was best done by means of private wards, for which payment should be demanded. At the London Fever Hospital and the Wardell Convalescent Home a charge of £3 3*s.* a week was made for such accommodation.

4. It was to be feared that in a large number of fever hospitals the nursing was not first class, and the patients were often intrusted to people who had had little or no special training. There were several reasons for this: the risk to life was considerable; the employment was often of a very temporary character; the social ostracism to which

those engaged in the work were subjected was no imaginary evil; and, lastly, the monotony of fever nursing was such that few good nurses seemed to care for a very long experience of it. It was impossible to eliminate all these drawbacks, but much might be done by offering wages and comforts in some degree commensurate to the trying nature of the occupation.

If a justice of the peace could compel a patient to leave his home because he had not proper isolation accommodation, the patient on his side had a right to expect that he should at any rate receive comfortable lodging, good food, and proper nursing, as some sort of compensation for having to leave his home and friends. The success of an infectious hospital could only be measured by the proportion of first attacked cases it was able to tempt within its walls. During a considerable portion of a patient's stay in hospital he was, approximately speaking, in a healthy state of mind and body, and, in proportion as this was so, the minor restrictions and limitations necessarily imposed upon him were likely to give rise to discontent and grumbling.

While ill in bed with acute fever he was content with his surroundings, but when he was practically, except for infection, well, he needed ample resources of recreation and amusement to diminish the monotony of his exile. For this reason there should, at all fever hospitals, be a recreation ground, and a piece of asphalt for the patients to take exercise on in wet weather. In large towns convalescent homes, such as those attached to the acute hospitals of the Asylums Board, were, of course, a great boon, while a popular and discreet matron, with a well-trained and active staff under her, was an important element in the hospital's popularity. In many fever hospitals the regulations as regards the visiting of patients were unnecessarily stringent. It could hardly be seriously urged that there was much danger in the visiting of patients suffering from enteric fever, or, if proper precautions were taken, from diphtheria. Even in scarlet fever, in an experience of three years at one of the largest fever hospitals in the metropolis, he had only met with one case in which there was the least suspicion of a visitor having contracted the disease from a patient. Of course, the visitors were in almost every case adults and, therefore, but little susceptible to scarlet fever, diphtheria, or enteric; and it would be a working basis to exclude all visitors under twenty-one years of age. He stated that the following regulations were in force in the hospitals of the Metropolitan Asylums Board:

"Visitors are further advised not to enter the wards in any of the hospitals when in a weak state of health, or in an exhausted condition, but to partake of a good meal before entering the hospitals. They will be required, when in the wards, to carefully avoid touching the patient, or exposing themselves to his breath, or to the emanations from his skin; and will not be permitted to sit on the bed or handle the bedclothes, but will be allowed to sit on a chair by the bedside at some little distance from the patient. Visitors will also be required to wear a wrapper (to be provided by the board) covering their dress when in in the wards, and to wash their hands and faces with carbolic soap and water before leaving the hospital, or to use such other mode of disinfection as may be directed by the medical superintendent. Visitors are strongly urged not to enter any omnibus, tram-car, or other public conveyance immediately after leaving the hospital."

In dealing with small-pox, there was little doubt that visitors should, as far as possible, be absolutely excluded, since it was a most difficult matter to disinfect the clothes and hair, especially of women, so as to prevent the carriage of infection. When visitors were practically excluded, it was the more desirable that every facility should be given patients to communicate by letter; an efficient apparatus should be provided for the disinfection of the letters. An ordinary hot-air bacteriological sterilizer was perhaps the best and most economical apparatus. In large institutions where a Washington Lyon stove was used, the letters might be disinfected by simply turning the steam into the outer jacket. The removal of the patient from his home to the hospital often afforded an opportunity for the exercise of considerable tact and discretion on the part of those immediately connected with it. A request was sometimes made that the ambulance might call after dark, as its appearance outside a house of business was naturally a serious blow to it, and was calculated to delay the notification of the disease. Requests of this kind should, as far as practicable, be granted. The ambulance should be provided with good springs, rubber tires, air mattresses and cushions, good ventilation, and facilities for washing and disinfection. Close and ill-ventilated ambulances were not only detrimental to the patient, but a cruel and unnecessary hardship on the nurse or attendant. A basket, under the control of the nurse, containing stimulants and milk, should be provided for the use of the patient on long journeys, while in the winter hot-water bottles and foot warmers should be carried.

A somewhat serious drawback connected with infectious-disease hospitals was the occasional recurrence of disease in the home of a patient apparently due to, or at any rate intimately connected with, his return from hospital. Cases had come under his notice in which patients, after having been in hospital three, four, five, and in one case eight months, had apparently taken scarlet fever back to their homes on their return thither. In some cases the explanation was presumably to be found in the retention by the mucous membrane of the air passages of infection inhaled during the patient's stay in a highly infectious atmosphere. In others the evidence was in favor of its being due to imperfect disinfection on the part of the sanitary authority, or rather those officials who represented it. An instance would make the point clearer. A notice was sent to the friends of a patient that, on a certain day, their child would be discharged from hospital. Unfortunately, some complication intervened which prevented the discharge, but three or four days from the time when the first notice was sent scarlet fever broke out in the house. In this and parallel cases the explanation probably was the taking out from some box or cupboard of imperfectly disinfected clothes which the child had worn before being taken to hospital. It was a good practice for the medical officers of the hospital to warn the parents that there was some risk in placing a child, fresh from a highly infectious atmosphere, into the same bed with a susceptible brother or sister; and Dr. Hopwood, medical superintendent of the London Fever Hospital, stated that this was the practice he had adopted for some years past. Passing the patients through convalescent homes might do something to mitigate the evil, but, unfortunately, these cases sometimes occurred after discharge from convalescent homes for infectious diseases.

In spite of all efforts, it was to be feared that the occasional outbreak of other diseases of an infectious nature in wards devoted to one specific fever could never be completely obviated. There must, from time to time, be imported into fever hospitals cases which were incubating other diseases, such as scarlet fever, measles, or whooping-cough. Much might be done by cultivating an observant spirit among the nurses and encouraging them to look for any fresh symptoms. It was most important that the temperature of all patients, even during convalescence, should be taken and recorded at least once daily. The employment and education of intelligent women as ambulance nurses, who would inquire diligently into what history there might be of the recent occurrence of infectious disease in the patient's home, would do something to diminish the risk. In one instance he had prevented an outbreak of varicella in a ward by acting upon the report of the ambulance nurse, who stated that the disease had just recently been present in the patient's house. The patient was isolated, and ten days afterward came out with chicken-pox.

What, he asked, was the exact value of the medical certificate which certified the disease from which the patient was suffering? It appeared to him that, from a legal point of view, all responsibility must rest with the signer of the certificate, and in the event of a patient wrongly diagnosticated contracting the disease for which he was admitted, there could be, assuming the certificate to have been acted upon, no blame to be attached to the authorities of the hospital. In many cases admitted into hospital with a certificate of scarlet fever there were few signs or symptoms to support a diagnosis, the accuracy of which was eventually confirmed by a typical desquamation. In diphtheria the secretion on the fauces might be of a very doubtful nature and yet diphtherial paralysis subsequently ensue. The moral responsibility of the medical officer, however, remained, and in practice the position simply resolved itself into the medical officer exercising his best jugment in the disposal of the cases. In those cases which had the disease for which they were certified or nothing, the evil results of adhering to the certificate, though bad enough, were not very far-reaching; but in the case of a patient certified as suffering from, say, scarlet fever, but really a victim of some other disease, such as measles, it assumed a much more serious aspect, and in the interests of the majority of the patients the case must be excluded from the wards. To return the patient at once in the ambulance was not a proceeding calculated to obtain or retain the good-will of the general profession, whereas to admit the patient was to submit him and the other inmates to a reciprocal danger.

The answer to the question was the provision of ample and efficient isolation accommodation. Isolation wards were required for cases wrongly diagnosticated, for noisy and delirious patients, for those suffering from venereal diseases, and for cases of other infectious diseases which might crop up in the general wards, such as measles, varicella, variola, whooping-cough, mumps, ringworm, etc. Cases in which more than one infectious disease existed at the same time could not be refused admission, yet their admission entailed the sole use of an isolation ward. This fact of the frequent coexistence of infectious diseases was one which had hardly been kept sufficiently in mind in planning fever hospitals, as the demand they made upon the isolation accommodation was really very considerable. The proportion of isolation accommodation to beds in hospital should be a pretty high one.

Dr. E. W. Hope observed that hospitals for infectious disease were an important link in the chain by which infectious disease was controlled. Their object was to afford prompt and attractive means of isolation of infectious sickness, in order by this means to minimize or suppress such forms of sickness. Hence, in order to insure full utility, the structure, site, and administration must be such as to insure the confidence of the profession and the public. They must, moreover, be worked together with (1) an efficient system of notification; (2) an appropriate sanitary staff for purposes of routine inspection and investigation, and available in any special emergency; (3) an ambulance service; (4) and also full means of carrying out the requirements of the Public Health Act, so far as they related to disinfection and cleansing of infected houses and clothing. With these essentials every inducement and facility should be held out to the public to avail itself of the hospital. The result would appear in the diminution of the zymotic death rate, as well as in the number of cases of zymotic sickness, and consequently in the number of patients requiring to be treated in the hospital. Hence a very much less number of beds would be required than the 1 per 1,000 of inhabitants, and the cost and extent of hospitals for infectious disease would tend to lessen. But it was not wise to have only the minimum hospital accommodation, and it was most undesirable to charge for patients admitted to the hospital. Ratepayers supported the hospital, and ratepayers should have the right to use it. He could not agree that the responsibility for the accuracy of the certificate should rest with the medical man signing it.

Dr. Whitelegge thought that the responsibility for removal to hospital was not covered by mere certification in pursuance of the Notification Act. The notification certificate had to be sent even if the patient was dying. Where the certificate was accompanied by a definite statement that the patient was fit for removal there could no longer be any difficulty. In small-pox, and to a less extent in other isolated diseases too, the notified cases included a serious percentage of mistaken diagnoses, and in small-pox, at all events, it was assuredly not safe to send a notified case to hospital without confirmation of the diagnosis by some one with special experience—be he M. O. H. or medical superintendent of the hospital. As to the question of charges for admission, it had surely now been decided by the experience of all hospitals for infectious diseases; where special indulgences were desired, they should, of course, be paid for. In all other cases the hospitals should be free; and they were not free if charges were even nominally made and then remitted. The institution of such charges brought in a trifling income, at the cost of the greater part of the efficiency of hospital isolation. While so much had been done in large towns to deal with infectious disease, it was a matter of regret that in country districts they had not yet settled the question whether it was desirable to have an infectious hospital at all.

Dr. Boobbyer said that Nottingham had recently been provided with a new isolation hospital, which many of those present had visited on the previous day. The hospital had been completed for twelve months, and, notwithstanding the confident prediction of many self-constituted judges that it would never be anything more than an empty monument of its builder's folly, it had, during that brief period, become so popular that no less than eighty-seven per cent. of all the notified cases of scarlet fever had, during the second quarter of the current year, been removed to it without the use of compulsion in any single instance. The Health Committee had done all in their power to make it popular. A code of rules had been adopted regulating the work and conduct of all its inmates and officers. The staff had been very carefully chosen, the nurses, as far as possible, being drawn from the educated classes. The available accommodation in the permanent wards, with an allowance of two thousand cubic feet to each bed, was insufficient to accommodate all the cases requiring removal. For the time being, therefore, the temporary wards still standing on the inclosure had been brought into use, and an arrangement made by which acute cases could be housed together and provided with two thousand cubic feet per head of air space. Each case, as convalescence was established, was drafted out into less ample wards. The minimum bed space of any part of the hospital was twelve hundred cubic feet, all space above a height of fourteen feet being ignored. Six small isolation or quarantine wards for doubtful or other exceptional cases had been provided, and as many as four of these had been in use on one occasion for doubtful cases alone. As an example of an exceptional case, there was at the present time in hospital one in which acute chicken-pox was superadded to unmistakable desquamation after scarlet fever. Dr. Boobbyer and his predecessors had alike advised the Health Committee to make no charge for the treatment and maintenance in hospital of ordinary cases, whatever the class to which they belonged. This advice had borne fruit, for no compulsory charge was now made to any one. No class distinctions were made in the hospital, but a judicious arrangement frequently promoted the comfort and social intercourse of patients. By statistics already published elsewhere Dr. Boobbyer had been able to show that isolation, as now practiced at the Nottingham Infectious Hospital at Bagthorpe, had the effect of diminishing the spread of infection through the agency of the persons isolated by more than fifty per cent. Taking one hundred primary hospital cases, it was found that some twenty-three per cent. additional cases occurred in the houses from which they were removed within three weeks of their removal and after their return home, the latter constituting only one sixth of all. For every one hundred home cases the result of a year's experience went to show that nearly sixty per cent. additional ones had to be looked for during the progress of the cases at home. It was interesting to note in the first place that the present hospital mortality (2·5 per cent.) was less than one third of that occurring among similar cases outside, and in the second that the cause of death in more than half the fatal hospital cases was malignant—that is, intractable—scarlet fever, whereas such death cause was returned in only about one third of the home cases. Kidney and other complications, fostered by injudicious treatment and exposure, was a far more frequent occurrence at home than in the hospital. Hospital patients were usually kept in bed for three weeks; it was almost impossible to observe such a rule at home. The average duration of stay in Bagthorpe Hospital for all normal cases was some seven weeks and a half. He had estimated from the office register the number of patients coming to hospital in successive years from houses above a £50 rental, and had discovered that during the past year the percentage of such admissions had risen nearly one hundred per cent. compared with similar periods in the past.

Dr. A. Hill, medical officer of health for Birmingham, said that the large diminution of zymotic diseases was attributable in a great measure to the fever hospitals, although, of course, other agencies had been at work. The benefit of such hospitals was that they educated the public to the value of isolation, and much of the prejudice against them had disappeared. Overcrowding a hospital was, of course, a very great evil. There was great difficulty in educating the committee of management up to the point of believing that there was any harm in overcrowding. It was difficult to convince them that if the cubic space was diminished mortality was increased, and there was a marked increase in the severity of the disease. That was particularly noticeable in small-pox. The question of responsibility for the diagnosis and notification of disease was a matter of great importance. He held the view that the medical man who certified the case was to be held entirely responsible for the diagnosis. If he was not an expert, what was he? He was an expert in the practice of medicine, and if, after seeing the patient day after day, he could not diagnosticate a rash and come to a conclusion as to the true nature of the disease, he could not see that the medical officer of health, dropping in when required, should be expected to be able to do so. He did not think it was fair he should be asked to take the responsibility; if, however, it were meant that the responsibility for the final diagnosis should rest with the superintendent of the hospital, he quite agreed, because there were many variations in the manifestations of diseases. Hence the value of wards in which doubtful cases could be put. There was a difficulty about a medical officer of health stepping in and interfering with the diagnosis of the regular medical attendant—he would be at loggerheads with every practitioner in the town. He (Dr. Hill) would not presume to do so, and when he was requested to do so he always declined. The idea of charging for admission to fever hospitals was exploded. In Birmingham they were willing to accept payment if people were willing to pay, but they never intended to exact it. Payment had been taken from the guardians for pauper cases, but it was seen to be inimical to the interests of the hospital, and it was announced that the hospital was for the benefit of all without charge.

Dr. S. Monckton Copeman thought that, as an addition to the usual isolation accommodation provided by sanitary authorities, it would be advisable, at any rate in large centers, to make arrangements also for the temporary housing of persons turned out of their homes during disinfection. In a recent epidemic of typhus fever which he had investigated several persons had undoubtedly received infection from friends who had paid them a visit during the performance of disinfection in their own homes. If this state of things could only be remedied, it was quite conceivable that the extra expense involved would be more than repaid to the authority by the smaller number of cases which it would be necessary to admit to the local isolation hospital.

Dr. Groves (Isle of Wight) said that if the subject were of interest to the medical officers of health of districts in which isolation hospitals obtained, it was of far greater moment to those who administered districts which had no isolation hospital. In a health resort, for example, there was great liability to the introduction of infectious disease. In such districts it was necessary to make dangerous cases paupers, in order to protect the community from, possibly, an outbreak of small-pox. As to the diagnosis of cases, it was most undesirable that the medical officers of health should not go behind the notification. If a case of chicken-pox were diagnosticated as small-pox, much trouble might be caused; but it was better so than that the medical officer of health should interfere. Should he once enter upon that course, there was nothing but trouble before him. The medical officer of health in a district of health resorts had to be especially careful, because there would be some who would vote themselves outside the operation of the Notification Act, and would excuse themselves upon the plea of the trade interests of the particular resort. As to the payment for admission to an isolation hospital, the more reasonable course would be to pay a person suffering from infectious disease to go into the hospital; any way, the sanitary authority should thank the patient for assisting to protect the community by consenting to isolate himself at the expense of the community. As to the cost of isolation hospitals. At Nottingham, for a visit to the isolation hospital of which so many of the section had been indebted to Dr. Boobbyer and the chairman of the Sanitary Committee of the Town Council, they seemed to have got hold of the right end of the stick, for, notwithstanding the large outlay, the worthy alderman said the ratepayers would be only too glad if there were no occasion to use the hospital.

Mr. Walter Smith (Chairman St. Pancras Health Committee) considered that in doubtful cases it was advisable that the medical officer of health should see the patient if requested by the attending medical attendant, but that it was absolutely necessary that the medical officer of health should be debarred from private practice. He recommended that a resolution should be passed by this meeting to that effect. He advised also that in future the Metropolitan Asylums Board should be altogether separated from the guardians. At present many patients objected to go to these institutions, thinking they would be classified as paupers. He would also recommend that every isolation hospital should have a probationary ward in which doubtful cases could be put until a proper diagnosis could be made.

Dr. Mason spoke of the advantages of hospital isolation, which was essential in carrying into effect the compulsory notification of diseases. In Hull they had erected a modern hospital. Each block was distinct in itself for administrative purposes, affording accommodation for a sister and nurses in charge. Probationary wards were erected to receive patients suffering from diseases of a doubtful character. No charge was made to patients received into the public wards; special rooms were set apart for the reception of private cases, for which £2 2*s.* per week was charged. The duration of stay in hospital was about eight weeks, and the cost per patient about £5. The responsibility of removal and isolation of patients in hospital devolved upon the medical officer of health, the responsibility of the medical practitioner ceasing after notification for removal to hospital.

Dr. Tatham, the chairman, suggested, with respect to the question of responsibility in the diagnosis of infectious disease, that the existing differences both in opinion and practice among medical officers of health might possibly be explained by the varying conditions under which these officers severally exercised their functions. Above all things it was desirable, from a preventive point of view, that the early removal of even suspicious cases should be secured; and in order to accomplish this, with reasonable safety to the patient, it was necessary that every fever hospital should contain wards, or preferably a separate block of wards, for the isolation and observation of such cases, apart from the infected parts of hospital. Reference had been made by Dr. Copeman to the desirability of providing apartments for the isolation of the families of infected patients, pending the disinfection of the infected home. He (the chairman) might mention that in Manchester, in Leeds, and he thought in other places, such a provision did exist—a house, or houses, being kept ready for this purpose by the sanitary authority. Referring to the new isolation hospital recently erected at Bagthorpe by the Corporation of Nottingham, Dr. Tatham spoke of it in terms of high commendation, both as regards the site and as regards the design and general arrangement of the hospital.

Hæmatoma of the Ear in the Insane.—In the July number of the *American Journal of Insanity* we find an interesting article on The Treatment of Hæmatoma Auris, by Dr. Henry Smith Williams, medical superintendent of the Randall's Island hospitals. After a few remarks on the ætiology of the lesion, Dr. Williams proceeds as follows:

So conspicuous and so disagreeable a symptom as this has naturally called for active therapeutic interference. Various plans of treatment have been resorted to. One classical measure has been to blister the ear. A more irrational proceeding than this, theoretically, it would be hard to conceive; practically, its results fully justify the expectations which might reasonably be based on it. Most persons of experience have reached the conclusion, which might have been arrived at *a priori*, that non-interference is preferable to this treatment.

More recently, some physicians have advocated opening the hæmatoma and dressing surgically. In view of the fact that the tumefaction is sure to subside spontaneously if uninjured, this treatment is about as rational as vesication. Its results are equally flattering.

Other measures have been suggested, but so little good have they seemed to accomplish that very many asylum physicians have reached the conclusion that non-interference is always the best policy with hæmatoma. In this opinion, so far as it relates to the fully formed hæmatoma, I fully concur. I have seen no good result from treatment of a completely developed hæmatoma. In my opinion, it may best be allowed to subside as it will, protecting it as far as may be from danger of rupture. It may leave great deformity or little; it is almost certain to leave some. If rupture and discharge of contents do occur, it is then but rational to treat the wound by ordinary modern aseptic methods.

So much for fully formed hæmatoma. But the purpose of the present paper is to contend that hæmatoma should almost never be allowed to become fully developed. I say almost, because exceptionally a hæmatoma will spring up, as it were, in a single night and be beyond control before it is discovered. But in the great majority of cases the development is much more slow. It appears first as a redness and tumefaction of the ear, unequivocal in its promise. If at this stage a rational system of therapeutics is acted upon, the hæmatoma may almost certainly be aborted and any deformity prevented.

And what is this "rational system"? In theory it is simplicity itself. A circumscribed area of tissue is swelling because of the effusion beneath its surface of serum and blood. The effusion is due to pressure from within—blood pressure and the pressure of osmosis. Counteract and overbalance this pressure by a stronger pressure from without, and the effusion must at once cease; absorption must take its place if the outside pressure continues; the tumor, instead of increasing, must subside.

Theory would perhaps carry us no further than this positively. But one might at least hope that after a time the tendency to effusion would disappear, and constructive tissue formation take its place. Stimulated by this hope, and reasoning along these lines, I looked about when first I saw a case of hæmatoma for a means of putting into effect this seemingly rational plan of treatment. I at once recalled two experiences that plainly pointed in the right direction. One of these observations was the cure of a nævus by the continued application of collodion for several months after all other means had failed; the other, the rapid cure of a small aneurysm of the facial artery by the same means. Apparently here was an ideal means of applying pressure. In practice I found it all that theory suggested. By applying repeated coatings of collodion, I was enabled to so contract the hæmatomatous ear that it assumed subnormal dimensions. After ten days or two weeks of such treatment the collodion could be allowed to peel off, and, fulfilling my expectations, it would be found that the tendency to hæmatoma no longer existed. Nor have I ever known it to recur in an ear so treated.

From that day till this I have never willingly treated a hæmatoma in any other way. I speak cautiously when I say that the results of this treatment have proved in the highest degree satisfactory. For four years I did not have a single failure. Case after case, in three different asylums, I treated so successfully that in most instances it was difficult or impossible to detect the difference between the hæmatomatous ear and its fellow. Then there came a series of failures in my experience, five of them in all, which I could not account for until I tested the collodion used and found that for some reason it had lost its power of contracting. Good collodion being substituted, good results were again attained.

So uniform have been the results of this treatment that I have come to look upon hæmatoma as a preventable condition, and to regard a deformed ear as a reproach to the physician under whose care it is acquired. I am thus sanguine about this treatment, yet I freely confess that I do not expect to see it equally successful in other hands. It seems to be the nature of new therapeutic measures to appear to succeed in the hands of their originator and to fail signally in the hands of others. This method is so simple and so altogether rational that I would expect more for it were it not for my experience as a propagandist. For five years I have gone on demonstrating as often as a hæmatoma came into my experience (with the exceptions referred to above) the results of this treatment. I have never published the method, it is true, but I have detailed it to most of the asylum physicians with whom I have come in contact in that time. Yet I am not aware that a single one has accepted it, and, so far as I know, there are just as many deformed ears developing in asylums now as there were five years ago. My present object is to bring this treatment to the attention of alienists generally, in the hope that all who have not gotten satisfactory results with other plans of treatment will give this one a trial.

I append a few rules suggested by my experience:

1. Use contractile collodion of the best quality.

2. Apply the collodion usually on the inner surface of the ear only. Exceptionally it may be necessary to apply to the outer surface also, but this should be done cautiously, as there is some danger of producing sloughing from over-pressure.

3. Apply at intervals of fifteen minutes till a coating of sufficient thickness to markedly contract the ear has been applied. Reapply as often as the coating tends to peel off—three or four times a day if necessary.

4. If the patient picks at the coating, restrain him with a camisole. This is only exceptionally necessary, but in rare instances it is absolutely essential. Those who adjure mechanical restraint must choose in these exceptional cases between two weeks' violation of their prejudices and a life-time of deformity for the patient. . . .

I fear there may be those who will feel that I regard this topic altogether too seriously. What matters it, I hear some one ask, whether there is deformity or not in a chronic insane patient, who will, in all probability, spend his life in an asylum? I reply, it is true the topic is not of salient importance. But occasionally a patient who has had hæmatoma does become able to go into the world; and, even at worst, in the back wards of an asylum, a deformed ear is not an especially pleasant decoration. Finally, if it be decided that careful treatment of hæmatoma is not worth the while, may we not as well at once admit that all treatment of chronic insanities is useless? Certainly no conscientious physician will contend for that proposition.

One other word. I have spoken as if this treatment were exclusively my own. Now, it certainly was original with me; but this is far from asserting that it first originated with me. It would be strange if so simple a plan had not been hit upon by others, and I shall expect to hear that such is the case. But it at least is true that I have never seen written reference to this treatment, nor have I been able to find any one who had heard of it or tried it except through my suggestion.

Dr. Williams's article is illustrated with a number of striking portraits of patients with aural hæmatoma.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

THE NEW YORK MEDICAL JOURNAL, SEPTEMBER 10, 1892.

Original Communications.

ON THE POISONOUS PRODUCTS OF THE TUBERCLE BACILLUS.

By T. MITCHELL PRUDDEN, M. D.,
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In a paper published somewhat more than a year ago [*] it was shown by Dr. Hodenpyl and the writer that dead tubercle bacilli introduced in moderate numbers into the ear-vein of the rabbit are capable of inducing after a time, at their seat of lodgment in the blood-vessels, especially of the lungs and liver, circumscribed growths of new cells which in many respects closely resemble miliary tubercles. These new growths differ, however, fundamentally from genuine miliary tubercles in that they do not undergo cheesy degeneration and never contain *live* tubercle bacilli, and hence are not infectious.

In a later study by the writer [†] it was shown that when dead tubercle bacilli are introduced in small flocculi into the air spaces of the rabbit's lungs there occurs at their seat of lodgment, first, a large accumulation of small spheroidal cells. This is immediately followed by a proliferation of epithelioid cells and formation of giant cells in the contiguous air-spaces. Then occur gradual necrosis, disintegration, and absorption of the primary small-celled center and a conversion of the peripheral zone into very cellular and vascular new connective tissue. Hand in hand with the absorption of the necrotic center the new-formed connective tissue becomes denser and less abundant, until finally the seat of lesion is indicated only by a shred or patch of dense connective tissue.

Based upon the results of these studies, the writer ventured to make the following conjectural analysis of the action of the tubercle bacillus in the human body:

1. So far as the primary morphological lesion is concerned, we may conjecture that the cell growth which is characteristic of miliary tubercle and diffuse tubercle tissue is due to the action of the protein of the bodies of the germs set free as these degenerate in contact with living cells.

2. It would seem that the cheesy degeneration which is so constant an accompaniment of tubercular lesions may be due to some metabolic product of the growth of the tubercle bacillus, wholly distinct from the cell-stimulating bacterial protein.

3. There still remains the possibility, most evident on clinical grounds, that, beyond the factor which causes the tissue cells to grow, and beyond the factor which induces necrosis, there may be yet a third agency of toxic nature to which many of the graver systemic effects of tubercular infection are due.

So far as the first part of the tentative analysis is concerned, the course of research has served only to strengthen the conjecture, for this production of tubercle-like structures without cheesy degeneration in the presence of dead and disintegrating tubercle bacilli has been since confirmed by Straus and Gamaleia,[*] by Abel,[†] and by Vissman.[‡]

The third factor indicated in this conjectural analysis rests upon data so abundant and so constantly accumulating that it need only be remarked, from the experimental standpoint, that Straus and Gamaleia observed more frequently than the writer an emaciation of the animals after injection of dead tubercle bacilli and the development of a marked vulnerability to subsequent injections, when the first had induced no evident systemic effects. Trudeau [#] has also noted marked emaciation after the injection in rabbits of proteids derived from the tubercle bacilli.

Turning now to the second factor, in view of the fact that, while cheesy degeneration is a most constant accompaniment of the genuine tubercular lesion, it is absent from the analogous and quite similar structures produced by the bodies of the tubercle bacilli freed from the soluble metabolic products of their culture growth, a most obvious experiment was suggested. This was to treat animals in which the pseudo-tubercles had been produced by dead bacilli with tuberculin, which contains the soluble metabolic products of its culture, and to see whether cheesy degeneration or any other modification of the lesion were induced.

The experiments undertaken with this end in view were not sufficiently advanced at the publication of the last paper to be useful, and it is my purpose to give a certain completeness to this feature of the theme by recording them now, although the results were largely negative.

In the mean time Vissman, repeating our experiments on dead bacilli, has found that the treatment of rabbits in which the dead bacilli had been injected with *small doses* of Koch's tuberculin did not induce cheesy degeneration in the lesions.

The primary question in these studies was to learn whether crude tuberculin was capable, when introduced into the lungs or the vessels of rabbits simultaneously with dead tubercle bacilli, or injected subcutaneously after the pseudo-tubercles had developed, of inducing cheesy degeneration.

The tuberculin used was in part that supplied from Berlin, in part that made by myself from my own cultures in the way indicated by Koch. The tubercle bacilli were killed and prepared by the methods described in the former papers. I do not deem it necessary to give details of these experiments, but only the results, since the sole end sought was to learn whether cheesy degeneration or other marked alteration was or was not induced.

In the first series of experiments on seven animals, immediately after the introduction of the dead bacilli into the ear-vein, I injected subcutaneously from 0·75 to 1·5 c. c. of tuberculin, and the animals were killed at intervals from the fifth to the thirty-fifth day. I could find absolutely no difference in the lesion between these animals and the controls injected with the same lot of dead bacilli, but without the lymph. There was no cheesy degeneration.

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[*] *New York Medical Journal*, June 6 and 20, 1891.

[†] *Ibid.*, December 5, 1891.

[*] Straus and Gamaleia. *Arch. de méd. exp.*, vol. iii, p. 704, 1891.

[†] Abel. *Münchener med. Wochenschrift*, April 19, 1892.

[‡] Vissman. Wirkung todter Tuberkel Bacillen, etc. *Arch. f. path. Anat. u. Physiol. u. f. klin. Med.*, cxxix, 1, p. 163.

[#] Trudeau. *Medical News*, 1892.

In the next series of experiments on five rabbits the dead bacilli were introduced into the trachea in the manner formerly described, but were mixed with tuberculin in a fluid emulsion before injection. These animals were killed on the seventh, eleventh, seventeenth, and twenty-ninth days, and the lesion appeared in no wise to differ from that in the control animals. There was no cheesy degeneration. This experiment was repeated in all its essential features with other cultures and other lymph on a second set of five animals, but with like negative results.

In the next series of experiments on eight animals, tuberculin in quantities varying from 0·5 to 1·5 c. c. was injected subcutaneously on the seventh, tenth, seventeenth, eighteenth, nineteenth, twenty-second, twenty-seventh, twenty-ninth, thirty-first, and thirty-third days after the intratracheal introduction of dead bacilli. Animals were killed—two died on the third and fourth day—on the eighth, thirteenth, fourteenth, seventeenth, twentieth, and thirty-second days. Of course, the animals killed later had received the most injections. No marked difference was observed between the lesions in these animals and in the controls which had received no tuberculin. There was no cheesy degeneration.

I have further made a series of intratracheal injections in the rabbit of small quantities of lamp-black, and after varying intervals have made repeated subcutaneous injections of from 0·5 to 1 c. c. of tuberculin. Such simple inflammatory reaction as is ordinarily induced in the rabbit's lung by the presence of lamp-black does not appear to be at all modified by these subcutaneous injections of tuberculin.

It thus appears, from these experiments on twenty-five animals, that neither by mixing tuberculin with the dead tubercle bacilli introduced nor by subcutaneous injections of large quantities into animals in which the pseudo-tubercular lesions were already established was it possible under the given conditions to induce cheesy degeneration. It is further shown that the cell reaction in the lungs in the presence of so moderate an irritant as lamp-black is not apparently affected by the subcutaneous administration of large doses of tuberculin.

It would seem hardly worth while to have carried out so long and arduous a series of experiments, in view of the meager results here shown, were it not to secure a certain completeness in the development of the theme. Even now it would seem hardly worth while to record them were it not that such a record serves to mark certain noteworthy changes in our point of view since these studies were begun, and to point more clearly the way along which the promise of successful research seems brightest.

In the first place, it seems pretty clear now that the primary lesion in tuberculosis, the formation of tubercles and tubercle tissue and certain inflammatory small cell gatherings which accompany them—that is, the lesions which are the direct result of cell activities—are induced, largely at least, by a peculiar proteid ingredient of the bodies of the tubercle bacilli. It seems further probable that this proteid substance is not set free, at least in an active form, as a metabolic product while the tubercle bacillus is alive, but only after its death and during its disintegration. It would appear to be established that the new cellular tissue thus produced is not inherently noxious, but tends to speedy cicatrization just as soon as the stock of stimulating bacterial protein is exhausted. Not only is this true, but there is much evidence that this new tissue formation may be primarily conservative, in so far as it does not interfere by pressure, displacement, replacement, or otherwise, with the visceral tissues in which it grows.

When we turn to the second marked morphological feature of tubercular inflammation—namely, to the cheesy degeneration, or coagulation necrosis, which is so marked a feature of the lesion—we come upon an element in our analysis of the tubercular process which is not only more obscure, but is fraught with the most sinister significance. What particular metabolic product of the tubercle bacillus it may be which is set free in the presence of the body cells, both old and new, formed at the seat of lodgment of the germs and which induces this form of tissue death, we do not know; whether it belongs among the albuminous or alkaloidal products is yet to be learned.

The experiments which this paper records do not show, as was at one time thought possible, that these necrotizing materials are to be found in the culture media in which tubercle bacilli have been grown but from which their bodies have been separated, and put in evidence by simple administration to animals.

Such a form of experimentation was of plausible promise indeed only at a time when we were asked to believe almost anything or everything regarding the powers and virtues of an unknown mysterious drug, and when an attempted ultimate analysis of a crude precipitate from this did not seem markedly incongruous.

More calmly viewed, several considerations appear worthy of note. In the first place, we do not know that there is any one or any particular combination of metabolic products of the tubercle bacillus in cultures which induce cheesy degeneration. But even assuming that such exist, it is far from certain that in this form of administration they could be sufficiently concentrated in the region of the pseudo-tubercles to produce marked effects. It is wholly credible that such materials, even if produced in tuberculosis as well defined chemical substances, may be more potent at the moment of their genesis, possessing, to speak in chemical phrase, a nascent vigor, which is later lost. Or they may come more directly in contact with the vulnerable cell complexes in the natural than under experimental conditions. Finally, it is not only possible, but very probable, that the metabolic products which we gather in our culture media after the life of the tubercle bacillus has run its course under these artificial conditions—that final mongrel mixture of beef-tea, salt, peptone, glycerin, and unknown organic compounds developed in the presence of the growing bacillus and afterward boiled and concentrated and called tuberculin—it is, I say, not only possible, but probable, that this mixture is a wholly different thing from the metabolic products which are formed in the human or animal body when the elements of the chemical equation are not dead imitative makeshifts of pabulum, but living cells and body juices with all their own complex metabolisms on hand, complicating, but none the less characterizing, the real chemistry of the tubercular poisons.

Of those new-found phenomena which but a few months since—announced mysteriously and masquerading for a while among the humane illusions of the hour—seemed to be ushering in a new day in the knowledge and treatment of tuberculosis, none was more striking, none more puzzling, and none more suggestive of a hitherto hidden new law in biology, than what was termed the "local reaction" after the administration to tubercular persons and animals of the new "lymph." That this mysterious drug —so the conception of the moment shaped itself—introduced into a distant part of the body, should seek out the lurking places of the tubercular poison, and with unerring directness there and there alone give evidence of extraordinary power, too readily assumed to be for the saving of the stricken, was testimony so strong to the potent virtue of the drug that it seemed a thing almost uncanny.

But as, one by one, the illusions have faded and calm extended study has unwrapped the facts about which these clung, some very material changes have been made in our conception of the relationship between the so-called tuberculin and the lesions and symptoms of tuberculosis.

In the first place, it has been shown that tuberculin is a crude mixture of various things, and that, even when separated from some of its dross, is still no single thing to which definite chemical formulæ and specific chemical nomenclature can with propriety be applied.

The demonstration that other bacterial products than those elaborated by the tubercle bacillus—such as extracts from *Bacillus pyocyaneus*, *Bacillus prodigiosus*, and the *Pneumococcus*—are capable under similar conditions of inducing a characteristic reaction, has gone far to clear our conception of the action of tuberculin and bring its powers, whatever they may be, into known categories. Finally, the so-called "selective power" of tuberculin and of other analogous agents introduced into the blood may now be considered, as was early conjectured by Buchner, to be due rather to the special vulnerabilities of the new-formed cell complexes which we call tubercles and tubercle tissue, than to any occult power in the agents administered. This point of view is strengthened by the results of the series of studies recorded in this paper. Closely similar, in many respects, to genuine tubercles as are the cell structures induced by the protein of dead tubercle bacilli, they inherently differ from them, most of all in the fact that they are composed of cells and tissue-masses which do not tend to death, but to organization and perpetuation in the form of cicatricial tissue. And my experiments show, in the whole series of animals, no evidence whatsoever, at any interval near or remote after the administration of tuberculin in large doses, of such a local tissue disturbance as constitutes the phenomena of tuberculin reaction. This I conceive to be important evidence, if such were needed, in favor of Buchner's view,* that the so-called selective power of tuberculin is wholly a matter of local tissue vulnerability. The genuine tubercle, beyond the anomaly of a new cell growth in response to the stimulus of the freed bacterial protein, which it shares with the pseudo-tubercles of our experiment, is further burdened with we know not what inimical metabolic poisons which the living or the dead germs may furnish. Hence, the new poison increment, from whatever source, introduced from without, is by the one new tissue-growth resisted, while the other responds in varying degree by those morphological and physiological changes which, when pronounced, we call the "local reaction." In some phases of genuine tubercular tissue indeed, especially the younger and the older, the reaction to tuberculin is not marked. In the former case the tissue vulnerabilities are not yet established, while in the latter those denser tissue growths which are under the healing impulse are capable of bearing unchanged the artificial burden.

Finally, I should like to call attention to the too often ignored fact that among the infectious diseases whose ætiology we know, tuberculosis stands apart, and that whatever light we shall gain of its nature by close analysis of its effects, or of its treatment, in whatever way, light must be sought along the lines which its peculiar nature suggests. Too much reliance must not be placed either in the study of its nature or in our dreams of its therapeutic conquest upon superficial analogies with infectious diseases induced by different germs working by other poison and in other ways.

We are but just now learning, as it would seem, not to give ourselves over too easily to the pleasing illusion that the glib use of scientific names necessarily carries with it a large measure of scientific knowledge. We have been, perhaps, too prone to forget that such names as protein and proteids, albumin and albumoses, simply denote great groups of complex organic compounds whose mysteries are not all explained when they are still further characterized as toxic. It seems, after all, as if it were the molecular constitution of the albumin molecule which must be studied and more clearly understood before we can feel solid ground under our feet in the chemical investigation of the more significant products of bacterial metabolism. In the mean time, however, new pathways are opening which seem to lead toward the conferring of artificial immunity from bacterial disease and the limitation of its ravages when once established. And all this in spite of the fact that these factors, which promise to be so beneficent in the prevention and treatment of bacterial disease, are of unknown molecular constitution. We are, indeed, fortunate in having names which express as much knowledge as do toxalbumin, toxalbumose, antitoxin, etc., but it may easily become a perilous fortune if we do not constantly remember that the knowledge which they convey is fairly insignificant beside the ignorance which they conceal. When, therefore, one speaks of the bacterial proteids of the tubercle bacillus and of their significance in determining the morphological features of tubercle tissue, he intends to express only in a general way the existence and effects of what may, after all, be a very complex combination of organic chemical compounds. And when a further analysis brings to light other compounds producing different effects, he implies in discussing them only the existence of substances which may prove to be made up, perhaps, of whole groups of metabolic products, which, with our crude experimental means, we may be able not at all to imitate. The performances and products of the *bacterial cell factor* we can, after a fashion, study in our artificial cultures. But of the *animal cell factor*, and of the numberless chemical complexities which its own vitalities may furnish when the two are brought face to face in bacterial disease, we can not so positively speak.

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* Buchner. *Fortschritte der Medicin*, May 15, 1892, p. 380

SUMMER COMPLAINT:

A CLINICAL CONTRIBUTION TO THE ÆTIOLOGY, PATHOLOGY, AND TREATMENT OF THE DISEASE.

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Despite all that has been written of late years upon this subject, our knowledge of the intimate nature of this malady, the great scourge of infantile life, has not made great progress, and the treatment being therefore vacillating and uncertain, directed now to one special symptom, now to another, is not attended by any greater success, as is clearly shown by the mortality statistics of our health offices, than it was formerly.

I use the term "summer complaint" as I know of no other more applicable, and certainly none that would better indicate the nature of the malady and the therapeutic measures necessary for its relief.

I hold this disease to be a morbid entity entirely distinct from the gastro-intestinal catarrhs produced by errors in feeding or diet or by toxic agents developed in the food, and most certainly distinct from *cholera infantum*, a term so frequently applied to it.

In order that the subject of this paper may be still more clearly defined, a symptomatic description is here appended at the outset: "A malady of the infantile period of life, a disease essentially of hand-fed children, affecting more especially those passing through their second summer."

It is a disease that prevails more particularly among the poorer class—those living in crowded tenement-houses and in close, badly aired apartments. It usually makes its appearance with the first days of July, though sometimes with the middle of June if that month be already very hot, as has happened in the last few years, and lasts until the early part of September, when, the nights having become cool, it rapidly disappears.

Symptoms.—The symptoms of this malady are restlessness, vomiting, diarrhœa, fever, emaciation.

(*a*) *Restlessness.*—After two or three hot days and nights the infant, which previously had slept well, becomes restless. The sleep is fitful and disturbed; there are frequent paroxysms of crying, these crying spells lasting from ten minutes to half an hour and even longer. The child is peevish; wants to be carried around on the arm; it will not rest in the cradle or bed. This restlessness, which is most marked at night, is also present in the day-time. When, however, the infant is taken out in the wagon or upon the arm into the cool morning air, or, if it be night, into some open space where the breeze has free play, it will sleep a nice, pleasant, quiet sleep that may continue uninterrupted for hours. As soon, however, as it is taken back into the house the restlessness and peevishness return.

With the increase in severity of the malady the restlessness increases. The infant gets but very little sleep, and only then, as already mentioned above, when out in the open air, or when under the influence of whisky or of some hypnotic. It will not stay in the cradle or bed; wants to be carried upon the arm continually; will cry for hours, till exhaustion compels it to stop. It kicks its legs, moves its body, rolls its head. This restlessness is generally greatest at night.

(*b*) *Vomiting.*—After a restless night or two, as already described, it will be observed that the child does not feed naturally; it will either not take all of its bottle or it will drink it down very greedily as if it had great thirst. After feeding, eructations of wind or sour-smelling material are apt to occur; or, if the food has been taken very greedily and hastily, some of it, perhaps the larger part, may be vomited. With the continuance of the conditions producing these phenomena the vomiting becomes more frequent, until, when the malady has reached its climax, nothing at all in the form of food will be retained upon the stomach; it will be ejected almost as soon as taken.

With the increase in the frequency of the vomiting there is also an increase of thirst and of hunger, and the infant will take its bottle or its drink greedily only to eject again what it has taken. The great thirst is one of the marked features of the malady.

(*c*) *Diarrhœa.*—With the setting in of the restlessness and of the vomiting there occurs also an increase in the number of the stools. At the outset there may not be more than three to six stools in the twenty-four hours; at a little later period they may go up to ten, and at the climax to fifteen to twenty in the same period of time.

At first they are semi-solid, homogeneous, yellow in color, and neutral in reaction; then they become more liquid in consistence, green in color, and acid in reaction. Or they may be semi-fluid, heterogeneous, and green, with fragments of yellowish-white casein, and acid in reaction; or quite watery, with numerous flakes of yellowish or greenish matter, and acid in reaction. Or the stool may contain a large quantity of mucus mixed up with the greenish or yellowish matter, almost like that of a mucous diarrhœa. Or it may be entirely white in character, like a deposit of casein coagulated in small lumps, as if the casein had been expelled from the intestines just as it had come from the stomach, without undergoing any change in them. Usually there is considerable mucus mixed in with the lumps of casein. Sometimes the stool is half white and half green.

The character of the stools is not constant, changing from day to day; and this inconstancy is marked from the outset of the disease. Nevertheless, it is considerably dependent upon the food that is administered. Thus the white or half-white stool mentioned above is only observed in children fed with cows' milk that has undergone no other preparation than boiling and dilution with water.

The odor of the stools is at first fæcal, then it may be either acid or sour-smelling, or offensive and putrid. Or we may have the three odors in the following order: First, the ordinary fæcal; then the sour-smelling; and, last, the offensive or putrid. Occasionally we also find a moldy or musty odor. The putrid stool is alkaline in reaction.

The act of defecation is preceded by pain, manifested by the expression of the face, by crying, by twisting of the trunk, and drawing up of the legs. When this diarrhœa has continued for any length of time there may be tenesmus, and there is very frequently prolapse of the rectum with the stool. Under these circumstances a minute quantity of blood in the shape of a bright, red streak will be noted in the stool.

Sometimes great exhaustion follows it, and the child will lie back on the arm or on its bed with its face pale and eyes closed and very near to a syncope.

The abdomen is distended with flatus. Undoubtedly this is the source of the frequent colicky attacks observed. Tenderness of the abdomen I have never noted.

(*d*) *Pyrexia.*—With the setting in of the restlessness it will be found that the hands of the infant are warmer than usual, but the increase of temperature is especially well marked on the head, over the verto-occipital region, which is hot to the touch. A thermometer placed in the axilla will indicate an increase of from 2° to 3°. Usually the highest temperature is noted at the outset, and sometimes also just before death. This increase of temperature continues throughout the whole period of the disease, with variations therein. However, when the diarrhœa becomes very profuse and the exhaustion thereupon marked, the temperature may fall to, and even below, the normal. It is a rather noteworthy feature that even then yet the head does in many cases feel hot, or at least warmer than natural, to the hand applied to it.

The pulse is increased in rapidity, beating 130 to 150 per minute. It is weak.

(*e*) *Emaciation.*—It is one of the noteworthy features of the malady that emaciation sets in very early and may reach an extreme degree. And it is but natural, as, from the frequent vomiting and the diarrhœa, but very little food is carried into the system to supply the deficit. The face becomes pale; the eyes are surrounded by dark circles; the nasal lines appear; the fontanelle is depressed. The fat disappears from the body; the muscles grow soft and flabby. This diminution of the fat continues until the infant is a mere skeleton. Its face then presents a peculiar appearance—an appearance characteristic of the disease: the face of advanced old age. The skin is dry and wrinkled. The buttocks and inner surfaces of the thighs are reddened by the acid stools and concentrated urine. There is great feebleness and languor, but the voice usually maintains its vigor up to a late period; and an infant too feeble to hold up its head will cry lustily for a considerable time at a stretch. Toward the end of the malady, when the drain upon the system has almost completely exhausted the vital forces, the voice becomes weak and piping.

The *urine*, as might be expected, is diminished in quantity and passed only three to four times daily; frequently at longer intervals—as much as twelve hours.

It is a noticeable feature that with a remission of the heat—*i. e.*, with a little fall in temperature, with a little cooling of the atmosphere, as occasionally occurs during the summer—all the symptoms ameliorate and the infant appears much better, only to relapse again with the next rise in temperature.

When death approaches, all the phenomena are usually exaggerated: the pyrexia is greater; the restlessness is greater, the infant rolling around and moaning and emitting, occasionally, shrill cries; the vomiting is incessant; that is, everything administered by the mouth is immediately ejected. The discharges from the bowels are either entirely arrested or passing involuntarily, and small in quantity, almost continually. There is frequently strabismus; if not that, indolent pupils. Occasionally convulsions set in shortly before death.

Sometimes the phenomena are just the reverse: A subnormal temperature; a cool skin; a dull, drowsy state verging on stupor; an apathetic refusal of food and drink; a cessation of vomiting, even though a little drink, as of cool water, be put into the mouth and swallowed; arrest of diarrhœa; coldness of the extremities.

When the malady tends to recovery, the vomiting stops—that is, food and drink begin to be retained; the stools decrease in number and become more normal in character and appearance; the fever disappears; the skin becomes moist; the restlessness grows less pronounced and disappears and the sleep thus becomes sound, uninterrupted, and refreshing. The eyes grow brighter, and the infant begins to manifest interest in its surroundings. It takes its food better and rapidly regains flesh and strength. Micturition becomes more frequent, more in accordance with the normal state; the urine normal in quantity and character.

Summer complaint is a disease of comparatively long duration, lasting from four to six weeks, and I have seen cases that have lasted eight weeks.[*] This applies more particularly to hand-fed infants. Infants nursed at the breast—and these are but very rarely attacked—generally, if appropriate measures are instituted, quickly recover.

Death is most frequently due to the extreme exhaustion of the vital forces.[†]

There is one special feature of this disease which, though rarely observed, merits some attention here, as but few text-books make mention of the same. This feature is a peculiar exanthem which makes its appearance usually at a late period in the disease. Small, roseola-like spots appear upon the arms, upon the legs, or upon the whole body, and it looks very much as if the child were going to have an attack of measles. When very abundant, it is very likely to be mistaken for measles by the laity, and the poor little patient, who is already burning with fever and consumed with thirst, is swathed in heavy flannels and dosed with warm saffron tea[*] until either compassionate Death relieves him or the intelligent physician saves him from further torture. The spots remain isolated, or not more than three coalesce. The skin between them retains its normal color. The eruption lasts from two to five days, gradually paling in that period, and then disappears without desquamation. The very few instances in which I observed this exanthem were cases of summer complaint that had either not been treated at all or only indifferently up to the period of eruption. Baginski[†] says that in the few cases in which he observed the exanthem it was not of bad import; in the cases under my observation it heralded a fatal issue.

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[*] See report of cases further on.

[†] See *Diseases of Children*, by J. Lewis Smith, edit. 1890. *Diseases of Digestive Organs in Children*, by Louis Starr, 1886.

Occasionally, and still more rarely, another form of exanthem is observed. This, as Baginski[‡] rightly observes, can hardly be called anything but an erythema multiforma. It appears in the form of pale or bright-red patches, of greater or lesser extent, and with more or less infiltration of the cutis. This also disappears in a few days.

In the years 1871, 1872, 1873, 1874, and 1875, while connected with a colleague in medical practice in a tenement-house quarter of this city, I had occasion to see many cases of this disease during the summer months of each year. From the setting in of the hot weather it was nothing but summer complaint day after day, almost *ad nauseam.*

In the course of this large experience I had occasion to try almost every method of treatment recommended and every remedy that up to that time had been advised: bismuth, chalk, oxide of zinc, calomel, hydrargyrum cum creta, pepsin, lactopeptin, tannic acid, hæmatoxylon, opiates, various kinds of infant foods, the raw-beef treatment imported from Russia and so highly lauded by Trousseau.

The results of all and the several methods were mostly *nil.* The children whose parents were not of the poorest, whose habitations were not of the worst, and who had sufficient vital powers to carry them through the long siege, dragged through a miserable existence until the setting in of the cooler nights, when the disease began to abate, and the infant that had been worn down to skin and bone gradually revived, gained in vigor, and lived, while those not so endowed died, despite all and everything that was done for them. This experience was further verified by the observations made, though not in such numbers, in subsequent years.

In view of this unsuccess in treatment with all the remedies at command, even with such as had been heralded at one time or another as veritable specifics; in view of the fearful mortality attendant upon this disease, it became evident to me that the nature of the malady was not yet at all understood, that the supposed pathology of the disease, as taught by post-mortem section, was erroneous, and hence this failure.

This conclusion arrived at, I began the study of the subject anew. With this purpose in view, I carefully reviewed the mass of notes taken and the histories of cases kept during the past years. From a careful collation of these, the following facts stood forth prominently:

a. Nursing infants may be attacked by the malady.

b. That even in families where the most scrupulous care was exercised as to feeding, bottles, and milk, such cases would occur.

c. That infants were affected who received no milk at all, but were fed with different kinds of infant food.

d. That even the most restless and sleepless child in the house became quiet and slept when kept out in the open air. I have seen mothers keep their little patients out till two and three in the morning.

e. That the infants that were quiet and slept while out in the street (that is, in the parks and open spaces, away from the large brick houses) would be but a short time in the house when they again became restless, noisy, and fretful, and had to be carried around upon the arm until morning, when, usually from sheer exhaustion, they would fall into a short, fitful slumber.

f. That the infants that vomited and purged at short intervals in the house would, while out in the street (in the open places above described), be able to retain food and have rest from the diarrhœa for as much as three to four hours and even longer. As soon as they returned to the house, or rather a short time thereafter, the vomiting and diarrhœa recurred with their previous frequency.

To these points I added the already well-established facts laid down in all text-books and corroborated by my notes:

1. That this disease always prevailed at one and the same season—to wit, the hot months of the year.

2. That it was chiefly among the tenement-house population that lives in apartments that are hot and stuffy and which are still further heated by the cooking, washing, ironing, etc., and by the burning of lamps at night, that the disease manifested itself.

A careful consideration and weighing of all these facts—and they are facts that will be verified by all who have had sufficient opportunity for observation in the homes of the people—led me to the inevitable conclusion that *heat* was the principal, if not the sole, factor in the ætiology of this malady.

The therapeutic indication, the logical sequence of such a conclusion, was clearly this: that we must address ourselves to the modification of the ætiological factor, *heat* or *its effects,* if we desired success for our therapeutic intervention—*remotus causa tollitur effectus.* But how to do this? It is true that I might have advised removal to the country, to the mountains, to the sea-shore; but, unfortunately, it is mainly those, as already said, who do not possess the necessary means to get away whose children are thus afflicted. I determined, therefore, as I could not change the temperature, to resort to such a measure as would do for the time being what is accomplished by removal to the country, to the mountains, or sea-shore—*i. e.,* remove the child from the heated atmosphere, and at the same time remove any effects already produced by it—a measure that had proved of greatest service in heat stroke *—viz., the wet pack.

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[*] This is no exaggeration; it happened in a case under my observation.

[†] *Berliner klin. Wochenschrift,* 1889, No. 49.

[‡] *Ibid.*

The opportunity for testing the correctness of my views did not present itself to me, owing to absence from home during several summers and for other reasons, till the summer of 1887, which was an exceedingly hot one, and cases of summer complaint were numerous. As the treatment was very nearly alike in all cases, I shall report here only a few, selected from the whole number treated by me after the new method for some special feature that each presented:

CASE I.—Sammy F., aged nine months, tenth child, bottle-fed with Nestlé's milk food since his third week, rather stout, always a very good child, giving his mother but little trouble, is now in a period of dentition. The family occupy a small house of eight rooms on one of the best streets in the city. Some years previous they lost two children with summer complaint.

In the early part of July the child became very restless, cried all night, was very fretful through the day, and wanted to be carried around constantly upon his mother's arms. Diarrhœa has set in and continues to grow worse. He is nauseated, gags, and when he takes food he vomits. He usually sleeps up stairs, in a rather small bedroom, in a bed with one or two adults. As the nights were exceedingly hot, I advised the mother to keep the child down stairs, even throughout the night, in a rather roomy parlor and much cooler than the upper floors. For the sickness at the stomach I prescribed a weak solution of cocaine, a dose of which was but eight drops, and given at intervals of from two to three hours. For some reason or other the mother did not take my advice with regard to keeping the child down stairs, and the cocaine was of but temporary benefit. For the time being the nausea was allayed, to return in a little while after the administration of the medicine. The diarrhœa continued, the number of stools increasing in frequency despite the usual mixtures that were given to check them—in short, the child grew very much worse. Though I had hesitated at first, I determined now to follow out the therapeutic indication above mentioned. I therefore directed the mother to wrap the child in a wet pack (as already described in my paper on Hydrotherapy and my paper on Heat Stroke), to renew it when warm, and to continue this process for two to three hours; then, when the child was quiet, to leave it off, and resume again as soon as he manifested any signs of irritability. The mother did as I directed, and the effect was marvelous. The infant went to sleep and slept very quietly and nicely, and even the renewal of the pack did not disturb him much. As soon as the process was completed he fell asleep again. This continued thus nearly the whole of the first day. The nausea disappeared, the diarrhœa was very much improved, and the child every way better. The mother continued the application of the wet pack every day—that is, two to three in the morning from about 10 A. M., and three to four in the evening—for two months, and the marked improvement obtained at the outset continued. His appetite was fair. The food (Nestlé's) was fairly well borne, though not quite as it should be, and not in the usual quantity. A little red wine (claret or Ives's seedling) and water, with a biscuit broken in it, was given twice daily and very much relished. The diarrhœa was almost completely arrested, not more than three to four stools a day, and frequently not more than one or two, and these of good character; when the stools were more than the latter figure they usually contained some undigested masses. He slept well at night and did not disturb his mother much. When the cooler weather set in, the infant, which had weathered the great heat of the season and had gone through the process of cutting four teeth, was in excellent shape, somewhat thinner, it is true, but very fat in comparison to other children similarly affected that I had seen in my former experience. It took but a very few days until he began to eat again his usual quantities, and very rapidly regained his fat.

His mother, who had had the sad experience with this malady above mentioned, said to me, when the child had fully recovered, that she would not have believed it possible to accomplish so much with so little medication had she not witnessed it herself.

CASE II.—Baby R., aged eleven months; well developed, well nourished, and nursing at the breast.

The family occupied the lower floor of a house, the front half of which was occupied by them as a store and the rear half divided off into living-rooms. The bedroom was thus in the center, a small compartment without any windows and no ventilation except what came from above, the partitions not reaching to the ceiling. The family is well to do, and everything is kept scrupulously clean.

Was called to see the baby in the morning and learned that it had been seized with vomiting and diarrhœa, whether in the night or in the early morning hours the mother was not positive. Temperature, 102°; it is extremely restless, tosses about in its cradle, and cries constantly. I prescribed a febrifuge mixture (spirits of Mindererus, sweet spirit of niter, and a minute quantity of tincture of aconite), but this was vomited every time, and about 1 P. M. I was hurriedly called to see it again. I now directed the mother to wrap the child in the wet pack, and this to be continued till night; then to discontinue it for a while and to resume it again when the child became restless. I also directed that it be not given the breast, but that a teaspoonful of equal parts of lime water and milk, cold, be given every half-hour to allay thirst. This was done; the diarrhœa and vomiting ceased at once, and after four hours the mother again gave it the breast, which it nursed; the milk was retained; the lime water and milk were then discontinued. The wet pack was continued for two days, with intervals of abstention, and the infant then discharged well.

CASE III.—Baby L., aged fifteen months; weaned; well-developed child; eats, and is evidently well nourished. The four incisors, both upper and lower, cut for some time already. Is now in the developmental period of another group—the anterior molars.

The family lives on the third floor (top) of a tenement house, occupying two large rooms, separated, however, from each other by a stairway. There are not more than three families in the house proper, the lower floor—separated from the others altogether—being occupied by a store. The apartments of the family are scrupulously clean and fairly well aired, the rooms having three and two windows respectively. Nevertheless, the heat in them, especially in the large front room—the best room—is exceedingly great; at times it seemed to me like a bake-oven, and this though no fire, for any purpose, was made in this room. The heat poured down from the ceiling and was so great that when I came to visit my little patient, despite the perspiration rolling down, I kept my hat on to shield my head from it. The infant is exceedingly restless, tosses about in its cradle, cries constantly, and is especially bad at night. The mother is almost distracted. It vomits and has some diarrhœa; the evacuations are of a greenish color.

I directed the mother to wrap the infant in the wet pack and continue its application for three hours; then to intermit and resume again as soon as the child again became restless.

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* Heat Stroke (Thermic Fever) in Infants. By H. Illoway, M. D. *Medical News*, August 8, 1891; *Cincinnati Medical News*, September, 1891.

For the thirst, to give it lime water and milk, equal parts, a teaspoonful every half-hour. The effect was excellent. The vomiting ceased at once; that is, the milk and lime water administered were retained. The diarrhœa was arrested. The child fell into a slumber and slept quietly and peacefully for quite a time. After the condition of the child had been greatly improved under this treatment I advised taking it out and keeping it out of the house even at night. As long as it was kept out it rested well, but when taken in it was but a little while till the child was again restless, tossed about, cried, until wrapped in the wet pack, when it at once became quiet and went to sleep.

However, after a while the mother, perhaps owing to multifarious duties incumbent upon a poor woman with a large family of small children, somewhat relaxed in her attention to the baby, and one morning early I was hastily summoned to see it, as it was very bad, as the messenger said. I went at once and found the child almost wild, as one might say. At times it almost stood upon its head, the head and feet resting upon the bed and the body forming an arch between these two points. There was marked rise of temperature, but it could not be ascertained by the thermometer, as the child could not be kept quiet or in one position for two minutes at a time. There was great thirst. I at once had the child wrapped in the wet pack and had some sherry wine brought, which I poured into a tumbler upon a lump of ice, and gave the child four to five small teaspoonfuls of it—two drachms and a half perhaps in all. The child quieted down in a very little while, and went into a refreshing sleep. Anxious to learn if possible what had caused this sudden change, I inquired of both father and mother as to their treatment of the child since the day before. The father told me that the child had been very comfortable the day before; it had been in the wet pack twice. In the evening he had taken it out and kept it out till 1 A. M., and it had slept well and even soundly, and had taken its milk and lime water. Feeling tired himself, he had then gone into the house and put the child into bed. It had slept till about 3 A. M., and then began to cry and toss around and stand upon its head; it had also vomited some milk that they had given it. When asked why he had not put the child in the pack, he said that he really could not say whether it was forgetfulness, owing to fatigue, or whether they were frightened by the child standing upon its head. As the infant seemed to me to suffer considerable pain—and to this I attributed the remarkable positions it would take—and as it displayed some nervous symptoms (slight twitchings), I prescribed a mixture of chloral hydrate in lac asæ fœtidæ, to be administered by rectal injection if needed; but so soothing was the effect of the pack that it was not required.

The plan of treatment pursued was this: Twice in the day, occasionally three times, the child was wrapped in the wet pack and kept therein for an hour and a half to two hours. In the evening it was taken out and kept out the greater part of the night, except on the rare occasions when it rained, and then the house was much cooler—sufficiently to permit of the child being kept in.

The food which it received was milk—plain, ordinary milk—mixed with a little more than one third lime water.

This treatment was carried out faithfully by the parents for two long months, I visiting the patient occasionally to keep myself fully informed as to the progress made, and for the purposes of history. When the cooler weather set in the child did not show any evidences of suffering; it had weathered that frightfully torrid summer in excellent condition; it was reduced somewhat, it is true, but not more so than other children that had kept well, and it was but a very short time till it had regained its previous weight and vigor. It had also cut, during the period referred to in this history, the four anterior molars and two lower canines.

Case IV.—Baby R., aged ten months; partly nursed at breast, but chiefly bottle-fed with milk and lime water. A large child. The family occupied a large, airy house in an excellent part of the city. They had just come from New York city, where the baby had been taken sick with summer complaint and a rather bad prognosis made for it. The child was restless day and night; wanted to be carried upon the arm, and cried almost incessantly. Both father and mother seemed distracted. It vomited, no matter what was given it, and had a marked diarrhœa, using a great number of diapers daily. It was very much emaciated.

For the purpose of assisting the stomach in digesting any material that might remain in it, and for the purpose of allaying its irritability, as also that of the intestinal tract, I prescribed a powder of—

℞ Bismuth. subnitrat. . . . . gr. viij;
Pancreatin (F. & R.) . . . . gr. iv;
Sodii bicarbonat. . . . . gr. j.
M. Make one powder.

One such powder to be given three times a day. For the great thirst, which was evident, a little good sherry to be poured upon ice, and two or three half-teaspoonfuls to be given every two or three hours. To wrap the child in the wet pack and allow it to remain for two hours and a half and then to leave off; to resume again as soon as the child became restless. To abstain from bottle feeding.

Two days afterward I was sent for again to call and see the child, as it was worse. I called and made inquiry and found that my orders had not been carried out with regard to the wet pack. The powders had been given, so also the sherry, and it had been fed but little. The vomiting and diarrhœa continued as before, and the restlessness was as marked—greater, if such a thing was possible. On learning this, I asked the mother why she had not fully carried out my orders. She made answer that it was too much trouble, and that the child would not live anyhow; her physicians in New York had said so. All she wanted was something to quiet the child so that it would not cry so. I gave her a sound lecture upon the duties of a mother, with rather vigorous denunciation of her conduct, and told her to get whom she pleased, but that I would not treat her child any longer. She begged me to continue, and promised faithful compliance. The effect of the pack was as excellent in this as in the previous cases. The child became quiet and slept well while in the pack, and even when out of it. Already, after the first few days, it was much quieter than previously. The vomiting and diarrhœa ceased.

The treatment as described was continued (under careful supervision), and under it, despite the hot weather, the child began to gain. To still further assist recovery of vital power, embrocations of cod-liver oil, twice daily, into the axilla were added to the treatment, and as the mother did not have sufficient milk, a little strained oatmeal was allowed morning and evening. The child continued to do well and to gain in flesh, and after a week of cooler weather it was as fat as butter.

Case V.—Baby M., aged ten months, partly nursed, partly fed—mostly fed, however, as the mother says she has but little milk. A large child. The family live in the attic of a five-story tenement-house and are exceedingly poor. The child becoming sick, it was taken to a college dispensary for treatment. The physician in attendance gave her some medicine, but at the same time informed the mother that the child was in a dangerous state, and that its death might be looked for in two or three days. Upon hearing this, she brought the child to my office for treatment. The baby presented the usual symptoms—restlessness, vomiting, and diarrhœa, and, superadded to all this, a state of feebleness that I ascribed to previous insufficient feeding. I reassured the mother and allayed her fears. I then directed her to wrap the child in the wet pack (she had witnessed the procedure in Case III) and to continue this at intervals for two days, then leave off; but always thereafter to keep the child well cooled off either by the cool sponge bath, cool bath, or, if it became very restless at any time, by means of the wet pack. To keep it out of the house most of the time; to give it every three hours (later on four hours) ten drops of good whisky in a teaspoonful of cold water. Not to feed it at all for the day, and not to nurse it oftener than every three hours and a half. Directed the mother to nourish herself better. Five days afterward the mother again brought the child to my office to show me how nicely it had done. It was apparently in good health, and kept so throughout the whole summer.

Case VI.—Baby M., aged twelve months, a well developed child and apparently well nourished; weaned since tenth month. The two central incisors, both upper and lower, already cut. The family live on the ground floor of a frame barrack, in two miserable back rooms, one of which is used as a kitchen and dining-room, the other as a bedroom for the family—two adults and three children. The rooms are rather dirty. Child is very restless; cries day and night; vomits everything given it; diarrhœa. Temperature 101·5°; considerable emaciation. Treatment: The wet pack, as already described in the other cases; to abstain from feeding the child for the next twenty-four hours, and to give it during that time nothing but lime water and milk, equal parts—one drachm every half-hour. Under this treatment improvement was rapid. Vomiting and diarrhœa arrested; temperature normal; child quiet. I now advised the mother to see that the child was kept cool by sponging with cold water, the cool bath, or by occasional application of the wet pack; to feed it for a time on nothing else but boiled milk, with an addition of one third its bulk of lime water. The child kept well, despite the great heat, and after a time a regular dietary was prescribed for it.

Summarized, the results obtained with this treatment were:

1. It at once calmed the restlessness and fretfulness of the child and gave it rest and refreshing sleep. The value of sleep—quiet and invigorating sleep—to the sick infant need not be expatiated upon, as it is patent to all who have treated children with any attention.
2. Cessation of the vomiting.
3. Arrest of the diarrhœa, or at least such decidedly beneficial modification of it that it ceased to be a source of danger.
4. Improvement of the digestion.
5. The children were maintained in very good condition, and when the cooler weather, especially the cooler nights, set in they rapidly and in brief time regained their former weight.

These results were certainly most remarkable in their excellence and far superior to any that I had ever obtained with any other plan of treatment or that I had seen obtained.

However, in a certain number of cases there was still room for further improvement in a certain special direction—viz., the digestion of the infant. Though the vomiting ceased and the diarrhœa was arrested, or at least so greatly modified that it did not constitute any more a source of danger, and though the children picked up, still the fact remained that the digestive power of the infant was enfeebled, and its feeding required the greatest tact and attention. It suffered from some form of dyspepsia; undigested particles were occasionally found in the stools; and any neglect of the mother in the matter of food was followed by an increase in the number of discharges and the development of considerable flatus. The question that naturally presented itself to me was therefore this: In what especial manner is the digestive function of the stomach affected by the ætiological factor, *heat?*

An answer to this was readily found in the investigations and experimental studies made upon this point by others. It is now a well-established fact, demonstrated by numerous clinical investigations, that in all febrile states there is a diminution which may amount to a total suppression of the *hydrochloric acid* secreted by the stomach. And it is not requisite that we have a very high degree of temperature; even a moderate elevation will have this effect. This has been well shown by the investigations of Gluzinski.[*] As is seen from Table I of his paper, his patient (typhoid fever—exanthem. typhoid.), with a temperature of not more than 102° F., had no hydrochloric acid in his gastric secretion, as was shown by careful examination of the stomach contents; this absence of free HCl continued even at 99° + F. It was only when the temperature had descended to the normal that HCl was clearly demonstrable in the stomach contents. Even Sassecki[†] and Edinger, who oppose this statement as too broad, acknowledged that in all febrile states where dyspepsia is present, this dyspepsia is due to the absence of or deficiency in HCl.

It might, perhaps, be claimed by some that this deficiency was due rather to the effect of the malady upon the economy in general than to the pyrexia *eo ipso.* This point has also been very clearly established by the experimental studies of Manassein.[‡] This investigator found that in animals put into a febrile state by artificial overheating, the stomach secretion showed a marked deficiency in HCl and a consequent diminution of its digestive capacity. Furthermore, his experiments have shown that such a deficiency of HCl may occur even when the pepsin constituent of the gastric juice is normal in amount. "Auf Grund des eben angeführten halte ich mich zum Schlusse, dass bei fiebernden Thieren die Säuremenge in dem Magensafte der Quantität des Pepsins unentsprechend sei, berechtigt."

The conclusion was therefore necessarily this: that the dyspeptic condition was due to a deficiency of HCl in the gastric secretion.

The further results of this study were an additional explanation of the marked beneficial action of the wet pack and the further therapeutic indication: *To assist the digest-*

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[*] Gluzinski. *Deutsch. Archiv f. klin. Med.*, 1888, p. 484.

[†] *St. Petersburger Mediz. Wochenschrift*, 1878, No. 19; *Deutsch. Archiv f. klin. Med., loc. cit.*

[‡] Manassein. Virchow's *Archiv*, vol. lv, p. 423.

ive function where it still remains enfeebled by the administration of hydrochloric acid.

I determined, should the opportunity offer, to carry out in my treatment of summer complaint, in addition to the measure that had given me previously such favorable results, the last-mentioned therapeutic indication. However, the material, so far as I am concerned, has been very scant, but a small number of cases that would come under the category of summer complaint, as described at the outset, having come under my observation since. Of these, I shall report in detail but three.

Though I was fully convinced of the correctness of my conclusions, and though I had administered pepsin and hydrochloric acid in certain cases of infantile dyspepsia, I had not the courage, when the time arrived, to break at once with the received traditions and to strike out in a course directly the opposite to that recommended by all the authorities in pædiatrics; and that is the explanation for the apparently halting manner in the treatment of the first case to be reported.

Case I.—R. F., aged four months, a stout and healthy child, that I have known since its birth. It was nursed at the breast for about five weeks, and then the mother's milk gave out and it was given the bottle with Nestlé's food. This is the sister of Sammy F. reported as Case I, *ante*, who is now a big fat boy. The surroundings of the child are the same as reported above.

August 1st.—The night previous, of July 31st, was excessively hot. The baby was restless and irritable, and had, as the mother, a very intelligent lady, reported, a marked elevation of temperature. The mother, recollecting the previous practice, had wrapped the child in the wet sheet, but only once, as she was in doubt as to its applicability in so young a child. For the time being it did good, however, and the child rested and had some sleep. The next day, August 1st, was equally hot and close. The child was restless, crying continually; it vomited; diarrhœa set in, and till evening the child had eight stools, when I was sent for to see it. It presented the characteristic shriveled appearance, had considerable elevation of temperature, and great thirst. I advised that the child be put in the wet pack and that this be kept up for at least two hours; for the thirst, that it be given a teaspoonful of lime water and milk, equal parts, cold, every half-hour.

August 2d.—This was done. The baby went to sleep in the pack, and slept well even after its discontinuance; it did not vomit any more. The child is brighter this morning; does not vomit; and has had but two stools since last evening. This treatment was kept up till the next day, and then the child being much better, it was given its bottle, though in smaller quantity and at longer intervals. The applications of the pack were repeated at various times for the next few days, and the beneficial effect maintained; still the digestion of the infant left much to be desired. I finally mustered up courage to abandon the beaten track and follow out the therapeutic indication last mentioned—viz., to administer hydrochloric acid.

Being somewhat at a loss as to the best manner of administering this remedy in this case, I took advantage of a formula given by Jacobi* and credited to Dr. J. Rudisch, which is as follows:

"*To one pint of water one half teaspoonful of official dilute muriatic acid is to be added. To this mixture add one quart of raw, cold milk; mix the two liquids thoroughly, and then boil for ten or fifteen minutes.*"

I instructed the mother in the details of preparation of the above nutriment, adding to the formula that only water that had been thoroughly boiled previously and cooled should be used, and gave explicit directions as to the quantity to be given at a time and as to the intervals—namely, three ounces every two hours and a half. For further precaution I had but half the quantity prepared at a time. The child took the milk thus prepared very well and throve nicely upon it.

It was about the 2d or 3d of September when an incident happened which was rather unpleasant. The child was seized in the afternoon with a profuse diarrhœa, and till evening, when I saw it, it was more dead than alive. I directed the following treatment: Subnitrate of bismuth, two grains every two hours. A mild sinapism—equal parts of wheat flour and mustard stirred into a paste with cold water—to be applied over the abdomen and to be shifted till the whole belly was reddened. To give it eight drops of whisky in a teaspoonful of cold water every two hours. In place of its food, which was inhibited, I gave half a teaspoonful of Reed & Carnrick's liquid peptonoids* every two hours. In three days under this treatment the child recovered, and was again able to take its bottle with Nestlé's food, to which the mother recurred again; but, as it did not tolerate it well, it was again given milk (obtained from a cow kept by a private family, and therefore rich) diluted with boiled water, at first one half and then one third. The cooler nights setting in, the baby was soon as fat as ever.

I can only explain this incident in one of two ways: either it was due to carelessness in the preparation of the milk—and there is good ground for this belief, for the mother, seeing the child doing well, became somewhat lax in her supervision, and allowed her daughters, very young girls, to prepare the food; and every physician knows how difficult it is to get an accurate history of things if the family are at fault—or it may have been possible that the HCl mixture was continued too long and a state of gastric hyperacidity created, and thus the diarrhœa produced by the exaggerated peristalsis to which this state gives rise. This can be readily understood when the fact is kept in mind that in the infant the stomach and intestinal tube are very nearly one organ.

Case II.—Baby R., aged seven months, bottle-fed with condensed milk since the second month; family live in a tenement-house, occupying three rooms on the third floor. The apartments are clean and have fair ventilation.

August 3d.—Called to see the child. The history of the child's illness the same as in the foregoing case—restlessness; crying, especially marked at night; vomiting; diarrhœa; some elevation of the temperature.

Treatment.—The wet pack as already described. To allay thirst, a teaspoonful of milk and lime water, equal parts, cold, every half-hour. In the place of food, to give it—that is, beginning not earlier than the afternoon—half a teaspoonful of Reed & Carnrick's liquid peptonoids every two hours.

4th.—The child is in good condition; has slept well the night previous; no more vomiting, and diarrhœa arrested; but three stools since my last visit. I instructed the mother to repeat the wet pack whenever the necessity therefor arose, and to look carefully to the child's feeding.

10th.—I was sent for again. The child, though doing fairly well, had occasional recurrence of the diarrhœa, and the mother desired something for that. Believing that this recurrence of the diarrhœa was due to indigestion, I instructed the mother in the preparation of Rudisch's milk, and directed her to give no more than five ounces and a half at a time, and not oftener than every three hours. To let me know then how the child got along.

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* *Am. Jour. of Obst.*, vol. xii, No. 3. *Treatment of Infant Diarrhœa and Dysentery.* By A. Jacobi. Reprint, p. 10.

* This preparation is an excellent one and has done me good service in many cases of infantile dyspepsia and gastric catarrh due to overfeeding, in which I desired to withdraw for a short time the usually given food.

About six weeks after this last mentioned visit, having occasion to be in the house, I inquired of the mother how the milk had acted. She informed me that it had done very well; that she had continued it for two weeks, and, the child doing well and gaining, she returned to her ordinary food, as the preparation of the milk required too much of her time—more than she could spare, as she was engaged in work that she could not neglect any longer.

Case III.—Baby B., aged seven months, apparently a well-nourished infant, nursed at the breast and also fed somewhat. Of good size for its age; cutting its upper incisors.

The family live in two back rooms, opening upon a porch, of a tenement-house in a narrow street—one that is generally not over clean. The child is very irritable and fretful through the day, and cries the greater part of the night. It has a profuse watery diarrhœa; considerable thirst, as it takes water with great avidity; slight elevation of temperature above normal, 99·6° F. Ordered chalk mixture with syrup of ginger. Two days thereafter the child was again brought to the office; as its father said, it was no better; he also brought a soiled diaper along to show me the character of the stool. It was white and consisted principally of unchanged flocculi of casein. I ordered the baby a cool sponge bath—ordinary hydrant water, to which a little warm water had been added—twice daily. Sponging of the abdomen especially with cold water. Inhibition of artificial food and proper regulation of breast feeding.

Medicine.—Acid. hydrochloric. dilut., gtt. j, in a teaspoonful of slightly sweetened water every two hours. I also advised a measure which I had found useful in other cases and to which I shall recur again—viz., the mother to sponge herself with cold water, at least the upper part of the body to below the breasts, twice daily—in the morning before nursing the child, and at night before retiring. I saw the child no more; but a short time thereafter I met the father and he told me that they had given the medicine for three days, and the child appearing well, they had discontinued it. The child has remained well since.

(To be concluded.)

JAVAL'S OPHTHALMOMETER AND ATROPINE IN DETERMINING ERRORS OF REFRACTION,

WITH AN INCIDENTAL NOTICE OF EYE-STRAIN AND GRADUATED TENOTOMIES.

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When we see a member of the profession charging the majority of us with gross ignorance, petty prejudice, bigotry, and with making many mistakes in diagnosis, and as being unfamiliar with and incapable of employing the latest methods of examination, and also with ignoring the discovery of a medical truth that is "fraught with incalculable good to humanity," we may suspect, at least, that those who make such charges against the medical profession and not the profession itself are the parties guilty of such ignorance and error. In this paper I propose to show that the author who in a recent number of this *Journal* has made such charges against the oculists of hospitals and dispensaries, is himself the one at fault in correctness of diagnosis and conclusions as to his cases. The truth of what I have just stated was never more plainly demonstrated than in two articles upon Eye-strain, which have very recently appeared in the *New York Medical Journal*.[*]

Aside from an incidental notice of some of the extravagant statements made in those articles by the author, and emphasized by quotations from the letters of his patients who gave him the credit of "doing wonders," "almost performing miracles," and, in one case, "not of cure, but of resurrection," etc., it is my purpose in this paper, by a report of over three hundred consecutive cases of refraction treated in the clinic of Professor Roosa, at the Manhattan Eye and Ear Hospital, from January 1, 1892, to July 1, 1892 (a period of six months), to emphasize the fact which Roosa, in a recent number of the *Medical Record*, has already brought prominently to the notice of the medical profession—to wit, "that when Javal's ophthalmometer is used we can dispense with any mydriatic for the purpose of suspending the accommodation, except in very rare and entirely exceptional cases." It is my purpose also to demonstrate beyond cavil (and I think it quite possible) that he who uses atropine at this day to determine all cases of refraction, and thinks it "unscientific" to do otherwise, is not in advance of the times, as he seems to think, but, on the contrary, far in the rear.

In the three hundred and eighteen cases here reported the examinations have not been made in a perfunctory way, "touched up with astringents, boric acid, etc., *without any effort to determine the underlying cause.*" [†] The equipments for the examination of patients in this clinic are not surpassed by those in private offices. Two ophthalmometers, perimeters, phorometers, optometers, and electric and gas lights in the refraction and operating rooms; graduated rods in the refraction rooms, measuring the exact distance of the patient from the test-cards; test-cards of all descriptions, a number of trial cases and sets of prisms, color tests, etc.—in fact, everything that is required for a complete and thorough examination—is at hand and is used. When a patient comes in and some refractive error is suspected, he is not touched up with some astringent and told to come again, but is assigned to an assistant surgeon, who examines the patient thoroughly, and, after so doing, reports back to the surgeon. The routine practice in the refractive cases is, first, to examine the eyes with Javal's ophthalmometer; second, test the eyes with the trial glasses; third, in the dark room examine the cornea and anterior portions of the eye by the oblique illumination; fourth, examine the fundus of the eyes with the ophthalmoscope, indirect and direct method. If any pathological changes are found, of course the field is taken, also color perception; but this would not then be a simple refraction case. This is the first test. If the patient is a simple presbyope and has no astigmatism, glasses are given at once; if not presbyopic, and especially if astigmatism is present, the patient is referred back to the same assistant surgeon for a second time, and sometimes even for a third examination. Now, there is nothing perfunctory or hasty about that examination. And as to the accurate fitting of frames to the face of each patient and centering the glass, the greatest care is exercised on this point, the optician to the hospital being one of the very best opticians in the city, who keeps a skilled clerk at the hospital who fills all orders —none being filled outside. There is no error or second-hand work, therefore, on the glasses. The history in full of each case is kept on record just as in private cases. The report in full of a few cases will attest this fact. Consequently the statistics of these cases are just as reliable as those collected from private practice, and I suspect the examination has been even more thorough as a rule. So much in defense of the statistics drawn from the three hundred and eighteen cases here reported, and in answer to the sweeping charges made against such institutions as ours.

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[*] *N. Y. Med. Jour.*, March 26, June, 1892.

[†] *N. Y. Med. Jour.*, *loc. cit.*, p. 649.

To come at once to the main point in this paper—"How often is it necessary to resort to atropine in the determination of errors of refraction?"—it is interesting to learn that in only five instances in the three hundred and eighteen cases was it necessary to use atropine to determine the error of refraction, or in one case in sixty-four! Is not this conclusive proof of Roosa's recent statement, "that it is only in the very rare and entirely exceptional cases that any mydriatic is needed to suspend the accommodation"? To me it is quite sufficient. It is to be remembered that these are not picked cases, but consecutive, as they have occurred in the clinic for six months.

As mixed astigmatic cases are thought to be the most difficult to fit without the use of atropine, I shall report three or four such cases, in addition to a few others in detail, which I have fitted without the use of atropine, at the clinic,* from January to July, 1892.

CASE I.—*Asthenopia, a Typical Case; Relief from Correction of Mixed Astigmatism with the Rule in Both Eyes.*—Mrs. Jane W., aged thirty-five. Mrs. W. can not read or sew for any length of time without getting severe pains in the eyes, which extend to the head. She is of a neurotic temperament and has three daughters of a like temperament, and all asthenopic from astigmatic eyes, the mother having mixed astigmatism with the rule in both eyes; the youngest daughter, aged twelve, having mixed astigmatism with the rule in the right eye, and simple hyperopic astigmatism in the left eye; the next daughter, aged fifteen, having simple hyperopic astigmatism with the rule in one eye, and simple hyperopic astigmatism against the rule in the other eye; the oldest daughter, aged seventeen, having irregular astigmatism, with diffuse opacities of both corneæ. This is an interesting group. All but the oldest daughter, with diffuse opacities of both corneæ, were fitted with glasses, without the use of atropine, by means of Javal's ophthalmometer and trial lenses.

February 9, 1892.—Javal's ophthalmometer gives the mother astigmatism, with the rule, 3·50 D., ax. 90° + or 180°—, in both eyes.

R. V. = $\frac{20}{70}:\frac{20}{40}$; w. + 2 c. 90° ⊃ — 1·50 c., 180°.
L. V. = $\frac{20}{70}:\frac{20}{40}$; w. + 2 c. 90° ⊃ — 1·50 c., 180°.
11th.—R. V. = $\frac{20}{100}:\frac{20}{40}$; w. + 1·25 c, 90° ⊃ — 1·50 c., 180°.
L. V. = $\frac{20}{70}:\frac{20}{40}$; w. + 1·25 c., 90° ⊃ — 1·50 c., 180°.

Jaeger No. 1 = 7″ to 18″. Ordered a sphero-cylinder + 1·25 D. ⊃ — 2·75 c., 180°, over each eye. So far the glasses have given perfect satisfaction.

CASE II.—*Asthenopia, Constant Headache, and Inability to read or write for any great Length of Time; Relief by Correction of Astigmatism.*—Wilhelmina W., aged twelve, youngest daughter of Case I. Her asthenopic symptoms were almost identical with those of her mother. Ophthalmometer gave her astigmatism with the rule 3 D. 90° + or 180° — right eye; 1 D. 90° + or 180° — left eye. R. V. = $\frac{20}{200}:\frac{20}{30}$; w. + 2 c. 90° ⊃ — 1 c., 180°. L. V. = $\frac{20}{30}:\frac{20}{15}$; w. + 0·50 c., 90°.

February 13th.—Test the same. A sphero-cylinder + 2 D ⊃ — 3 c., 180° right, and + 0·50 c., 90° left, ordered.

CASE III. *Asthenopia from a Low Degree of Astigmatism with the Rule at an Off Axis in One Eye and Astigmatism against the Rule in the Opposite Eye; Relief from Correction.*—Lettie W., aged fifteen, second daughter of Case I. Asthenopic symptoms similar to those of her mother and sister. Ophthalmometer gives her astigmatism with the rule, 0·50 D., 45° + or 135° — right eye. Astigmatism against the rule 0·25 D., 180° + or 90° — left eye. R. V. = $\frac{20}{30}:\frac{20}{20}$ w. 0·25 c., 90°. L. V. = $\frac{20}{20}:\frac{20}{15}$; w. + 0·25 c., 180°.

Jaeger No. 1 = 8″ to 20″.

February 11th.—Vision $\frac{20}{15}$ in each eye with the same glasses ordered.

The oldest daughter in this family, with irregular astigmatism and corneal opacities, had very poor vision and always will have. No attempt was made to fit her with glasses.

CASE IV. *Asthenopia: Constant Pain in Eyes on using them; Relief by Correction of Astigmatism.*—Ella M., aged twenty-three. The only one in her family troubled with her eyes. Eyes and head ache after using the eyes for close work. Ophthalmometer shows her to have astigmatism with the rule. 3 D., 75° + or 165° — right eye. 3 D., 105° + or 15° — left eye. R. V. = $\frac{7}{200}:\frac{20}{70}$ +; w. + 1 c., 75° ⊃ — 1·25 c., 165°. L. V. = $\frac{7}{200}:\frac{20}{100}$; w. — 5 D. ⊃ — 2·50 c., 15°.

February 25th.—Ophthalmometer shows the same readings. R. V. = $\frac{7}{200}:\frac{20}{50}$ —; w. + 1·25 c., 75° ⊃ — 1 c. 165°. L. V. = $\frac{7}{200}:\frac{20}{100}$ +; w. — 4 D. ⊃ — 2·25 c., 15°. Jaeger No. 1 = 6″ to 12″. Ordered sphero cylinder + 1·25 D. ⊃ — 2·25 c., 165° right, and — 4 D. ⊃ — 2·25 c., 15° left.

Here we have a mixed astigmatism in one eye and a compound myopic astigmatism in the other. She uses the eyes together with perfect relief from all asthenopic symptoms at this writing.

CASE V. *Blurring of Images when using Eyes for Near Work; Insufficiency of the Interni; Mixed Astigmatism in both Eyes with the Rule.*—The family history of this young man is good and he himself in good health. His asthenopic symptoms are marked. Ophthalmometer gives him astigmatism with the rule 3·50 D. in each eye; axis 105° + or 15° — right, 75° + or 165° — left. R. V. = $\frac{20}{100}:\frac{20}{30}$; w. + 2 c., 105° ⊃ — 1 c., 15°. L. V. = $\frac{20}{100}:\frac{20}{50}$; w. + 1·50 c., 75° ⊃ — 1·50 c., 165°. Reads Jaeger No. 1, 5″ to 12″.

February 25th.—Tests same. Ordered + 2 D. ⊃ — 3 c., 15° right; + 1·50 D. ⊃ — 3 c., 165° left. At present writing patient is still wearing glasses and relieved of all asthenopic symptoms.

CASE VI. *Periodic Convergent Squint, associated with Compound Hyperopic Astigmatism; Eyes Straight with Glasses on.*—Sam K., aged twelve. Has had a periodic squint of right eye for more than two years. Has worn simple spherical glasses + 4 D., but without effect. Ophthalmometer gives him astigmatism with the rule 2 D. each, 90° + or 180° — right; 120° + or 30° — left. R. V. = $\frac{20}{70}$: $\frac{20}{30}$ +; w. + 4 D. $\bigcirc$ + 2 c., 90°. L. V. = $\frac{20}{70}$: $\frac{20}{30}$ +; w. + 3·50 D. $\bigcirc$ + 1·50 c., 120°. Reads Jaeger No. 1, 5″ to 12″. Two days later, March 12th, Javal gave same readings. R. V. = $\frac{20}{70}$: $\frac{20}{30}$ +; w. + 4 D. $\bigcirc$ + 1·75 c., 90°. L. V. = $\frac{20}{70}$: $\frac{20}{30}$; w. + 3·50 D. $\bigcirc$ + 1·50 c., 120°. Ordered for constant wear. The ophthalmoscope was used in this case as in all the rest.

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* I could, if necessary, report two cases of mixed astigmatism from office practice, but the cases in the clinic have been examined with the same care as those at the office.

This last case illustrates a set of cases—squint cases or cases with a tendency to squint, manifested by a periodical squint—where the hyperopia has to be fully corrected to obtain the best results. These are the cases in which sometimes the use of atropine is beneficial, though it was not used in this case. The desired effect, however, was obtained. His eye has never squinted since he had the glasses.

There may be an objection raised to the report of the foregoing cases on the ground that not enough time has elapsed since the patients have been fitted with glasses to form a correct idea of their final benefit to the patient. The objection is a very reasonable one and quite just. This report of 318 cases from January 1, 1892, to July 1, 1892, has been chiefly to demonstrate the fact that atropine to suspend the accommodation in determining errors of refraction is but rarely called for (1 in 64 times), and, secondly, that the most difficult cases can be fitted without the use of atropine, as shown by the cases of mixed astigmatism and compound hyperopic astigmatism at off axes reported here in detail. That the final result of these cases will be just as good or better than those fitted under atropine is evidenced by the fact that those cases, similar to these now reported, which were fitted two and three years ago at the clinic and in private practice without the use of any mydriatic, are still wearing their glasses and are perfectly comfortable. A case to the point—and, fortunately, for illustration, a mixed astigmatic one which has been fitted two years—came to the clinic very lately to have the frames of her glasses, which had broken, repaired.

This young woman, Katie McG., aged twenty-nine, robust in health, a waitress, came to the clinic in July, 1890, complaining of severe headaches all the time, intensified by using the eyes for any near work. She was fitted by means of the ophthalmometer and trial lenses without the use of atropine and a mixed astigmatic glass prescribed: + 1·50 D. $\bigcirc$ 3·75 c., 180° right; + 1·50 D. $\bigcirc$ − 4 c., 180° left. These glasses gave immediate relief and have continued to do so. Since the glasses have been broken the headaches have returned, for which reason she came again to the hospital. The ophthalmometer gave astigmatism the same as two years previously—4·50 D., 90° + 180° — right; 4·75 D., 90° + 180° — left. The glasses could not be improved upon.

It may be asked, How do we know *when* it is necessary to use atropine in a case? That, again, is easy. When we get very little or no improvement in vision by the glasses indicated by the ophthalmometer, or when there is no astigmatism and the ophthalmoscope shows a high degree of hyperopia, then, and not until then, is it justifiable to use atropine. As an example I give one of the five cases in the three hundred and eighteen in which atropine was used.

CASE VII. *Asthenopia; Vision not improved by the Glasses indicated by the Ophthalmometer; Atropine used to suspend the Accommodation; the Axis and Amount of Astigmatism under Atropine corresponded to that indicated by the Ophthalmometer.*—January 26, 1892, Ella M., aged sixteen. This patient suffered much from headaches and pains in her eyes, especially when she used her eyes for near work of any kind. Her general health is fairly good. The ophthalmometer gave her astigmatism, with the rule, 1 D. in each eye; 75° + 165° —, right; 90° + 180° —, left. R. V. = $\frac{20}{200}$. L. V. = $\frac{20}{200}$. No glass improved the vision appreciably. Atropine ordered, a solution of four grains to the ounce, to be instilled three times a day for four days.

January 30th.—R. V. = $\frac{20}{200}$: $\frac{20}{30}$; w. + 5 D. $\bigcirc$ + 0·75 c., 75°. L. V. = $\frac{20}{200}$: $\frac{20}{30}$; w. + 3·50 D. $\bigcirc$ + 0·75 c., 90°.

February 6th.—R. V. = $\frac{20}{200}$: $\frac{20}{30}$; w. + 2 D. $\bigcirc$ + 0 75 c., 75°. L. V. = $\frac{20}{200}$: $\frac{20}{30}$; w. + 1·50 D. $\bigcirc$ + 0·75 c., 90°.

Ordered this last glass, which gave relief and comfort.

It will be noticed at a glance in the cases given in detail here that the *axis* of the astigmatism in each case, as indicated by the ophthalmometer, corresponds exactly to the axis of the glass accepted by the patient. And what is true of these few cases holds good in the main in the entire three hundred and eighteen cases, and should hold good in all cases properly examined with the ophthalmometer. In very few cases was there any difference in the axis indicated by the instrument and the axeis of the glass accepted by the patient, and when there was a difference it was not more than 5°; possibly in one case out of a thousand, as much as 10°. As an indicator, then, of the axis of the astigmatism in any given case, we find that Javal's instrument is a much safer guide than atropine, and this on the evidence of one who believes in the efficacy of atropine, Dr. George M. Gould,[*] of Philadelphia. Dr. Gould, in speaking of the change of axis of the glass when the patient came from under the influence of atropine, from what it was when the patient's accommodation was paralyzed, has this to say: "I have had several such cases, the patient, after the return of the accommodation, emphatically refusing the axis as clearly demanded under the mydriatic."

I wish to be put upon record as saying that "the ophthalmometer is a surer means of obtaining the correct axis of astigmatism and the axis of the glass that will be accepted by the patient, than suspending the accommodation by the use of atropine, and obtaining the axis by that means." The ophthalmometer measures the eye when it is active and in its natural state, whereas the eye measured when its accommodation is suspended is in an unnatural state.

Now, as to the *amount* of astigmatism as indicated by the ophthalmometer and that accepted by the patient, we need never be in doubt as to the proper glass to prescribe if we will only follow what Javal has taught us, and what Roosa has reiterated in his writings, that in astigmatism "with the rule"—that is, the vertical axis of the cornea being the more curved, let the astigmatism be hyperopic, myopic, mixed, simple, or compound—we have only to subtract one half to three quarters of a dioptre from that indicated by the instrument to have the proper glass, and in astigmatism "against the rule," the horizontal meridian of the cornea being the more curved, let the astigmatism be hyperopic, myopic, mixed, simple, or compound, to give full correction we add half a dioptre to that indicated by the instrument. The exception to this rule is rare, the error of half a diopter too much with, and half a dioptre too little against the rule, being a constant one and one to be expected, makes the ophthalmometer not "almost indispensable to ophthalmologists," but absolutely indispensable to ophthalmologists who wish to keep in the front ranks. And on these very points, the *amount* of astigmatism and the *axis* of the glass indicated, I am brought to a consideration of a recent article * upon the diagnosis of astigmatism by Javal's ophthalmometer. In the entire eighty-eight comparative tests the author wholly ignored the rule laid down by Javal to subtract half a dioptre when the astigmatism was with the rule, or give full correction or add half a dioptre when the astigmatism was against the rule. He seems to have expected more of the instrument than Javal ever alleged for it. In fact, he would have it perfect, and when he failed to obtain perfect results with it he is led to say: "For one reason or another, therefore, the ophthalmometric findings could not, without *a knowledge of the variation incident to the instrument* (Italics mine), be regarded as a safe guide to the diagnosis of astigmatism." All I have to say is, he who is without that knowledge has himself to blame, for "the variation incident to the instrument" is a constant one and ought to be by this time a well-known one, considering the number of times such fact has been in print.

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[*] The Statistics and Lessons of Fifteen Hundred Cases of Refraction. *Journal of the Amer. Med. Assoc.*, pp. 432–442

Again, in regard to the difference in the axis of the astigmatism indicated by the instrument and that found later under atropine in these eighty-eight comparative tests, I am led to believe, by one case (XIII), that the fault lay not in the instrument but in the observer. I may be wrong in my supposition, and trust that I may be corrected if I am.

In Table A, Case XIII, page 69, of article referred to, the author makes the following reading: "R. ± 1, ax. 180°. L. ± 1, ax. 180°. First observation: R. E. ax. 165° or 75°; the axis immediately changed to 180° or 90°." In a foot-note upon this case the author says: "Note in Case XIII the change in axis which occurred during the examination." If the same thing happened with Dr. Woodward in the examination of this case as has happened with me many times, especially when I first began the use of the instrument, the explanation of "the change in axis which occurred *during* the examination" is very easy. It was due simply to the patient having changed the level of her eyes by a slight rotation of her head. If we are not very careful to sight through the transverse slit in the disc just above the tube of the instrument to see that the patient's eyes are exactly on the same horizontal plane—one just as high as the other—but place the patient before the instrument without this precaution, we are almost sure to make a mistake as to the correct axis. This point was thoroughly impressed upon my mind last winter by Javal himself in Paris. I mentioned the fact that the axis of the glass accepted by the patient sometimes failed to correspond to that indicated by the instrument. He immediately had me place a patient before the instrument and make a measurement of her astigmatism. I did so, failing, however, to take the precaution to sight through the transverse slit above the tube to see that the patient's eyes were exactly level, found she had astigmatism and at an axis 5° from the vertical. Javal, without saying a word, sat down to the instrument, sighted through the transverse slit, leveled the patient's eyes correctly, then measured the astigmatism, giving the same amount as I had, but *axis* vertical. The trial lenses confirmed his reading. This was an object lesson for me. The least rotation of the head is enough to throw the axis off 5° or 10° from what it should be; hence the necessity of keeping the eyes not only steady, but in the same horizontal plane.

The fact that the instrument does not always indicate the axes at right angles to each other is one of its points of merit and not demerit, for the axes of astigmatism of the cornea are not always at right angles, and when such is the case the instrument points it out clearly. For example, if the instrument says astigmatism with the rule, 90° + or 165° —, if we find the individual hyperopic (+), prescribe a + glass, axis 90°; and if we find him myopic (—), give a — glass, axis 165°.

After cataract extractions the ophthalmometer finds one of its most practical applications, for it is in these cases that we do not wish to worry the patient or irritate the eye. By Javal's instrument we can find the amount and axis of the astigmatism in one minute's time, and test the eye in less than five. Time and again, by testing the axes shortly after cataract extractions, before we had the ophthalmometer, have I seen the eye irritated very much and sometimes iritis follow.

The glasses prescribed by the readings from the instrument in these cases are more satisfactory than those prescribed without its use, and this because the astigmatism in these cases is usually of a high degree and at an off axis. By the instrument we find the amount and the exact axis. That we do not without its use is well illustrated by the experience of Dr. Baldwin, of Montgomery, Ala.; for that matter, by the experience of all who have had many cataract cases; often, after an extraction with good result, no iritis in the course of healing and media clear at close of treatment, he had been unable to give a satisfactory glass, was conscious of the fact, but could do no better. He was pleased with the tests with the ophthalmometer of such cases at the Manhattan Eye and Ear Hospital, and bought one a year ago. We hope to have his testimony upon the instrument ere long. Our own experience with the ophthalmometer in such cases has been the happiest.

Before leaving this part of my paper, so firmly convinced am I that, where the merits of the ophthalmometer have not been duly appreciated, and that even in the hands of eminent men, in whom not the faintest lurking of a prejudice could be suspected, it has been due to the lack of observance of all the steps in the use of the instrument, I venture to give each step successively here of the *technique* of an examination.

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* *N. Y. Med. Jour.*, July 16, 1892, pp. 66–70.

1. Have a perfect light. The light from a large north window is best; two twenty-four candle-power electric lights next best.

2. See that the telescope or tube of the instrument is correctly adjusted by sighting through it and bringing the cross-wires in good view. This is done by turning the ocular or eye-piece to the right when the observer is myopic, and to the left when he is hyperopic. And the further to the left that the eye-piece can be turned, yet the cross-wires be maintained in good view, the better; and for the same reason which we follow in prescribing glasses—the weaker the minus and the stronger the plus glass the better, because by this means no extra accommodation is called into play.

3. Place the patient at the instrument with his chin on the chin-rest and his forehead against the forehead-rest with his eyes wide open and upon a level. To know when the eyes are exactly horizontal, which is all-important, sight through the *transverse* slit in the disc just above the tube or telescope of the instrument. This point can not be insisted upon too much, for the least rotation of the head will throw the axis off 5° or 10° from what it really is, and then, when we come to the trial case and the axes do not correspond, we are prone to blame the instrument when we are ourselves at fault.

4. The eyes level, we are now ready to place the blind in front of one eye and focus the other. To focus the eye, sight along the upper side of the tube through the notch (something like a gun-sight) at the center of the cornea. Now sight through the tube, at the same time moving the instrument forward and backward on the planchet, and up and down by means of the screw, until the image of the disc, doubled by the prism in the telescope and reflected from the cornea inverted, comes into view. Pay no attention to the two reflectors far out at the sides, but notice the two reflectors in the oval space made by the overlapping of the discs.

5. Obtain the "primary position." The "primary position" is nothing more or less than that point at which the transverse lines, dividing the reflectors into halves, become opposite or coincident and form one continuous straight line, which is an indication simply (when there is any astigmatism) that we have found one of the axes of the astigmatism. The other axis, in the great majority of cases, is 90° from this, therefore at right angles to it, and is the "secondary position." When there is no astigmatism the transverse lines are always opposite and coincident. When there is irregular astigmatism they are never coincident. To obtain the primary position, first turn the long indicator to 0°. If the transverse lines are coincident at this point, go no further; that is the primary position. If not coincident at the zero point, turn the tube from right to left—that is, the long indicator from 0° toward 135°. If the transverse lines do not become coincident before or when 135° is reached, go no further in that direction, but turn back to 0°, turning this time from left to right toward 45°; the lines will necessarily become coincident before 45° is reached. The primary position is *never* further than 45° on either side of 0°. This I wish especially to emphasize, for if we turn further than the 135° mark on one side or the 45° mark on the other, we will make the instrument read astigmatism "with the rule" when it is really "against the rule," and *vice versa.* When the lines become coincident at 135° or 45°, the extreme limits, being just half way between 0° and 90° on either side, by preference take 135° as the primary position—this for the sake of nomenclature. We see, then, that the "primary position" may be at 0° or any point within 45° of that point, but *never* beyond. Having got the lines coincident, it is only necessary to approximate the reflectors to be ready for the next step.

6. That of obtaining the "second position." This is obtained by turning the long indicator 90° to the left from the primary position. If the reflectors overlap, there is astigmatism with the rule, and the number of steps of overlapping is the amount of astigmatism. Say it overlaps two steps. It should be written thus: "Astigmatism with the rule, 2 D. 90° + or 180° —." If the reflectors separate when the second position is reached, it indicates astigmatism against the rule. Before moving the indicator from the second position, approximate the reflectors again, and then turn back to the primary position, when the plates will overlap—say two steps. Written thus: "Astigmatism against the rule, 180° + or 90° —." Nothing could be simpler than this, I am sure. Following the rules above, the long index always points the axis the plus glass will be worn, and the short index on the reflectors the axis the minus glass will be worn—*in any case.* It may be asked why I prefer to turn the cylinder from right to left. Simply that I may have the sliding index below, where I can get at it through the holes in the disc below.

Of course the observer's eyes should be properly corrected if he has an error of refraction.

Now, what does the instrument do? It gives the amount of astigmatism and the axis. These points ascertained, the rest is easy.

In order to get the best results with the instrument, it is not necessary to use atropine, as lately stated by a writer in the *New York Medical Journal.* That would be like trapping a bird, then shooting it. If you can catch the astigmatism "on the fly," so to speak, why subject your patient to two weeks of unnecessary and uncalled-for delay in the great majority of cases? Atropine has had its day of usefulness in ascertaining errors of refraction. The ophthalmometer has replaced it in the offices of many oculists, and I predict, with others, that it will almost wholly take the place of the old method of testing with atropine before a great while elapses. Dr. Roosa, who now prefers its use to atropine, was one of the first if not the very first writer to insist upon the use of atropine to determine astigmatism before the ophthalmometer had been made a practical instrument.* He now uses the ophthalmometer because its employment is a great advance on the old method.

The ophthalmometer is not always *absolutely* perfect in its measurements of the eye, and never will be for that matter, or any other instrument, as long as the human eye remains a human eye and does not become a piece of machinery. No cast-iron mechanical rules will ever apply to a living, acting tissue.

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* *Transactions of the American Ophthalmological Society,* Newport, 1878.

(To be concluded.)

DEATH FOLLOWING SUPRAPUBIC ASPIRATION OF THE BLADDER.*

By FRANK DYER SANGER, M. D.

In an institution harboring a great many men past middle life, the call to relieve a distended bladder is a common one.

During my service at Bay View Asylum, as a matter of routine practice, I usually tried a hot bath before resorting to catheterism. When it was impossible to get a catheter into the bladder through the urethra, narcotism was frequently resorted to, sometimes ice to the perinæum, or small lumps passed into the rectum.

In the event of failure to relieve the bladder by the above-mentioned methods, or when a condition of extreme distention required immediate relief, I have unhesitatingly resorted to suprapubic aspiration, believing (as it is quite universally believed) that the operation was perfectly safe if proper antiseptic precautions were taken.

A fatal result following a single aspiration of the bladder above the pubes is, I am sure, of such rarity as to be of interest, since, as Keyes says, "a fine needle can be inserted with as much impunity into the bladder above the pubes as is customary in using the hypodermic needle for the purposes of hypodermic medication."

About ten o'clock Wednesday morning, March 25, 1891, I was called to see George V., white, aged seventy-five, large, rather fleshy, and of full habit. He had had trouble in passing his urine for some time, but never retention. Since Monday he had suffered much pain in the region of the bladder, and could only pass a small quantity of urine at a time. Bowels constipated. Tongue rather coated. Appetite lost. I found the bladder moderately distended, its summit about two inches below the umbilicus.

The point reached by the summit of the bladder is not, however, a positive indication of the degree of its distention, for the individual capacity of that organ, as well as its shape, is variable, especially in advanced life.

The amount of pain is indicative, but I find in most cases when the bladder has risen to any considerable extent into the abdominal cavity, by pressing the ulnar border of the hand deep into the abdomen above, and grasping the summit as the uterus is grasped for the purpose of expelling its contents, a much more accurate idea can be obtained than by percussion or mensuration.

The condition of the abdominal wall in certain cases will not, however, permit of palpation. The other methods of examination then become indispensable.

In the case in question I was satisfied by palpation that the bladder was not especially embarrassed, though the patient seemed to be in considerable pain. A hot bath gave no relief. Upon investigating the urethra, I found a number of strictures, but was able to pass an ordinary long-curve catheter as far as the prostatic urethra. Nothing could be induced to penetrate further.

My manipulations gave rise to a rather free hæmorrhage.

The patient was then given morphine until he was decidedly stupid. At five o'clock I decided to aspirate, feeling sure that the bladder would suffer if not relieved soon. A double inguinal hernia and a rather thick accumulation of fat over the pubes made its upper border somewhat vague. I therefore decided to insert the needle well above. Having taken the precaution to wash, shave, and bichloridize the parts, and having thoroughly cleansed my needle, I felt that I could pass it through the peritonæum with safety. About a quart of urine was removed from the bladder and the patient expressed his relief. A drop of blood followed the removal of the needle. The point of puncture was covered with a strip of adhesive plaster and the patient went to sleep. Next day his bowels moved freely, and he passed considerable urine, a part of which escaped into the bed, so that its quantity could not be ascertained. On Friday morning he complained of pain in the lower part of the abdomen and tenderness; bladder could not be felt; pulse somewhat accelerated; temperature normal. He was given magnesium sulphate, which moved his bowels freely.

Toward evening the abdomen became tympanitic, the pulse more rapid, the temperature 98°, the expression anxious, and the urine passed in small quantities. The bladder could not be made out. Opium was given to relieve pain, and heat applied to the abdomen.

The patient died Saturday morning at seven o'clock, sixty-two hours after the aspiration.

Post-Mortem, Monday Afternoon.—I might say that the post-mortem was a stolen one, and for this reason the record is, unfortunately, incomplete.

Upon section of the abdomen, I found that the point at which the needle entered the wall was about two inches above the upper border of the symphysis pubis. A line of slight extravasation marked the track of the needle through the wall and parietal peritonæum fold; further than this its track could not be positively determined, as the pelvic cavity was filled with blood. Quite dense adhesions bound the bladder in all directions, which required considerable force to be broken up. There was considerable redness of the parietal and visceral peritonæum in the vicinity of the bladder. No pus or urine apparently.

In freeing the adhesions about the bladder, that organ was ruptured by the finger and about half a pint of turbid urine escaped. The entire bladder and urethra were removed *en masse*.

Just as I had secured my specimen, friends came to claim the body, and I was obliged to desist from further examination. I regret very much that I did not at least secure one of the kidneys, as it might have thrown some light upon the cause of death, which must, of course, under the circumstances, remain unknown.

Still the case, it seems to me, presents some very interesting features for discussion.

Simple aspiration of the bladder is not supposed to constitute an injury to that organ, but in this instance, as the sequel proves, from a clinical standpoint, the case is clearly one of injury to the bladder, and comes properly under the head of *punctured wounds* of the bladder. There have been a number of deaths reported from suprapubic puncture for the relief of a distended bladder.

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* Read before the Clinical Society of Baltimore.

Deneffe and Van Wetter, in 1877, collected 152 cases of suprapubic puncture with 6 deaths; 87 cases of rectal puncture, 11 deaths; but accidental puncture is an extremely rare thing, as are, in fact, all injuries to the bladder, as the following statistics will show: Of 16,711 surgical cases treated in St. Bartholomew's Hospital, there were only two of bladder injury.

Of 504 cases of injury to the bladder collected by Dr. Max Bartel, only 50 came under the head of incised, lacerated, or punctured wounds. In 22 of these 50 cases the perineal region was the seat of injury. Dr. Bartel had found but 26 cases of wounds of the bladder from injury to the hypogastric region, only 10 of these belonging to military surgery. I might say just here that these statistics do not include gunshot wounds.

It is rather an interesting fact that there is not a single case on record of bayonet wound of the bladder.

No cases of injury of the bladder by lance, sword, or bayonet can be found in the medical report of our late war.

It would appear from these statistics that we are robbing the bladder of an immunity which seems to be its endowment by Nature when we institute a procedure which is not, in many instances, a *dernier ressort.*

Since the introduction of Dieulafoy's instrument, aspiration has been a very common thing, and is undoubtedly safer than the use of the old trocar. How much of this increased safety is due to increased cleanliness is difficult to determine.

I have not been able to find another case of accident from aspiration in the literature, though my search has not been by any means exhaustive.

Deneffe and Van Wetter report 57 cases of aspiration with no accident, showing the improvement upon puncture.

The case before the society to-night, however, proves, at least, that aspiration is not entirely free from danger, and suggests greater circumspectness in its practice.

18 West Franklin Street.

NOTES ON
A CASE OF LARYNGEAL VERTIGO.

By JAMES E. NEWCOMB, M. D.,
ATTENDING LARYNGOLOGIST, DEMILT DISPENSARY;
ASSISTANT TO ROOSEVELT OUT-PATIENT (THROAT) DEPARTMENT.

In every department of medicine certain clinical manifestations with which we are not unfamiliar are still unclassified as to their ætiology and pathology. Such is the case with that symptom group known variously as "laryngeal vertigo," "laryngeal epilepsy," "glottic spasm," etc. As long as so few of these cases have been reported (the number extant being now about twenty-five) each new one is worthy of record, and this fact is the reason for the present brief contribution.

At a meeting of the New York Academy of Medicine, held February 18, 1892, this subject was discussed, following the reading of notes of a case, by Dr. W. C. Phillips. In that discussion the writer of the present article briefly participated, alluding to the case hereinafter described. At that time the history was incomplete, as the patient had passed from under observation. He has since been seen, however, and the full record is herewith given.

J. S., a man, aged forty, of German parentage, married, and a dealer in picture frames, was first seen by me at the Demilt Dispensary, July 7, 1891.

Previous History.—He came to this country when three years old. His father is living and subject to rheumatism; otherwise healthy. His mother is living and healthy, but of an excitable and nervous temperament. One sister died of acute phthisis at the age of twenty-four, and two others died in childhood from causes not known. One brother and one sister are living and in good health. There is not on either side of the family any history of insanity or epilepsy.

The patient himself is a short, stout, thick-set man with a florid complexion. He is about five feet four inches in height, and weighs one hundred and ninety pounds. He has never had other than the usual maladies of childhood, and these without sequelæ. He has smoked to excess and has been a moderate user of beer. He had a gonorrhœa a year and a half ago without sequelæ. There is a denial of specific disease, and he presents no evidence of either inherited or acquired lesions. Last winter he had a "quinsy" sore throat. He is an intelligent man, but seems to be of a neurotic temperament.

Ten days before admission, while walking on the street, he felt himself taking cold and grew hoarse. This latter symptom has grown steadily worse, and he can now speak only in a whisper. From the outset the hoarseness has been accompanied by a spasmodic cough, coming on about every hour and causing great headache, with pain in the side. The cough is concluded by the dislodging of a mass of thick, yellowish, tenacious mucus, which comes apparently from the larger bronchi. One week ago he was slightly feverish for a short time. He has had no pain in the larynx, but only a constant sense of dryness. His appetite is fair and bowels are regular.

Physical Examination.—The cartilaginous sæptum nasi is deflected to the right posteriorly and has on the left side a blunt vertical ridge. The mucous membrane of the nose is everywhere in a condition of subacute hypertrophic catarrh. There is no apparent obstacle to a free current of air through either nostril, nor does the patient feel any sense of nasal obstruction. The same catarrhal state obtains in the pharynx and larynx. The vocal bands are congested, but move normally. The examination of the larynx is made with difficulty, as the least contact of the mirror causes a violent spasmodic cough which is succeeded by a momentary period of apnœa, after which the spasm relaxes and a quantity of thick, yellowish, tenacious mucus is expelled. These attacks are repeated with every renewal of the faucial irritation. The lungs show only the physical signs of a catarrh of the larger and medium-sized tubes.

Appropriate local and general treatment was at once begun. The usual anticatarrhal topical applications were made and a sedative cough medicine given, together with fifteen grains of bromide of potassium three times a day. In spite of these remedies, the cough increased in severity, and a subconjunctival ocular hæmorrhage was occasioned thereby. This state of things continued about six weeks, and then was added the feature peculiar to this class of cases. Though the frequency of the attacks grew less (the number subsiding to six or eight in the twenty-four hours, and these generally at night), their character changed. Each commenced with a tickling in the larynx. Then came a cough with a general clonic spasm of all the muscles, of which the patient was fully conscious but which he could in no way control. On one occasion "it was so severe as to throw me out of bed" (patient's words). This muscular explosion was succeeded by a momentary unconsciousness, during which he grew, as he was told, "blue in the face." On two occasions he bit the end of the tongue, and each time, unless he could firmly grasp some support, he fell down. A firm hold of some object heavy enough to support him seemed to avert any actual loss of consciousness. There was no preceding dizziness or aura and no subsequent drowsiness or mental confusion.

About eight weeks after his first visit the attacks began to grow less severe and less frequent. Finally, in a fortnight more they ceased altogether. The true laryngeal crises were therefor included within the limits of one month. The patient was then lost sight of and not seen till March, 1892.

During this interval he had had no attacks and had felt perfectly well. An examination at the latter date showed a little thickening and slight congestion of the cords with normal excursion. The voice was perfectly clear.

Much has been written concerning the nature of these cases. As we study them carefully, we meet with many interesting problems in nervous functional activity. As Browne and F. I. Knight have observed, they are probably not so uncommon as we have hitherto supposed, or, to say the least, cases of cough leading up to a momentary unconsciousness are not rare.

As to the essential nerve disturbance, the theory of McBride as deduçed from Weber's classical experiment upon himself is the one which probably finds most general credence. Gray has regarded these cases as epileptoid in nature. It was the writer's view at first that the case here recorded could be classed as one of *petit mal*, but the completion of the clinical history and a more careful study thereof does not in his view bear out this conclusion. It is from a composite of symptoms rather than from the existence of any one or two that we predicate the existence of a disease, and the foregoing facts do not seem to warrant a diagnosis of epilepsy. McBride's theory seems far more applicable thereto.

The results of treatment were apparently negative. The most pronounced paroxysms occurred directly in the face of rigorous treatment, systematically carried on for four weeks, and seemed to subside of their own accord.

Perhaps too much effort has been expended in searching for a pathogenic factor in these cases. There is common to them all the fact of disturbed physiological function. The causes of perverted function here as elsewhere in the animal economy are manifold, but from these various points of departure there is but one physiological avenue leading up to the symptom-crisis. The missing link in our logical chain is the inability to explain why the severity of the paroxysms does not vary directly with the gravity of the local condition. Furthermore, we do not know why some patients are thus affected while others (the vast majority) escape. Until we learn to explore the labyrinth of what we call, for lack of a better term, "predisposition" to this or that malady, one phase of the problem, and that the vital one, will remain unsolved. Furthermore, we need to know more about the essence of nerve inhibition before we can clear up much which now seems vague and inconclusive.

131 West Sixty-first Street.

A NOTE ON
RETENTION OF MENSTRUAL BLOOD FROM IMPERFORATE HYMEN.*

By J. R. VANDERVEER, A. M., M. D.,
BROOKLYN.

In this note congenital imperforate hymen is alluded to in contradistinction to any traumatic closure of the ostium vaginæ or a congenital atresia above the hymeneal fold.

It is not the intention of the writer to enter into an extended discussion in this brief paper, but to refer to certain points in imperforate hymen which are presented in recent literature, notably in the paper of Dr. H. B. Hemenway in the *American Journal of Obstetrics* for August, 1891.

The excuse, also, for the introduction of this communication is that, in the opinion of the writer, the primary diagnosis, timely relief by operation, the after-treatment, and supervision of this pathological condition lie fairly in the province of the general practitioner—that is to say, in that of the family physician, and not necessarily in that of the gynæcological specialist. But of this more presently.

The literature of the subject under consideration does not appear to be voluminous, and what is offered seems to be concerned chiefly with cases *in extremis*—cases which have gone on for a period of two years or more without detection, or subject to a false diagnosis; in the first instance owing to a neglect of a physical inspection, and in the other to an examination carelessly or perfunctorily made; for example (as has been done), mistaking the hymen protruding and distended by imprisoned menstrual blood for the unruptured membranes in parturition.

The table of statistics in Dr. Hemenway's paper presents a point worthy of note—viz., as to treatment after incision and evacuation, and the mortality following. Of eighty cases cited (Dr. Hemenway's table takes in eighty-one, but one was not a case of imperforate hymen, but a traumatic vaginal closure), the largest number contributed by a single observer (Lawson Tait) was ten; the next in number (T. A. Emmet), four; Sisman, three; Russ, two; Wallace, two; the others, fifty-nine in number, each one by a single observer. Rapid evacuation, fifty-five; fatal, seven. Gradual evacuation, twenty-five; fatal, one. After rapid evacuation a second incision was necessary in no case. After gradual evacuation, five were required. The causes of death after rapid evacuation were: Septicæmia, three; peritonitis, two; exhaustion, or low peritonitis, one; rupture of Falloppian tube, one. After gradual evacuation, septicæmia, one.

By the doctor's tabulation enough is shown, if the fact was not before duly appreciated, to demonstrate the danger of allowing cases to go to extremity, whereas early operation would probably be devoid of serious risk; and this leads up to the position before stated—viz., that the early recognition and prompt treatment of cases of congenital imperforate hymen lie broadly in the domain of the general practitioner, owing to his peculiar and close relationship to the families under his charge. It is true that physical local examination of young unmarried women is to be discouraged, and rightly so, but it is as evident that no hard and fast law can be laid down on that subject. Happily, however, in cases of non-appearance of flow in young single women, when other physical signs are present and conception is not a factor in the case, certain symptoms point so plainly to imprisoned menstrual blood that they ought not to be disregarded; one alone of such symptoms, in the writer's opinion, is sufficient to call for local investigation. The symptom referred to is increasing dysuria sensibly aggravated at times corresponding to menstrual molimina.

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* Read before the Fifth District Branch of the New York State Medical Association, May 24, 1892.

An additional motive for the introduction of this note is an early individual experience of the writer, which he begs briefly to relate from recollection, as the notes taken and other statistical matter disappeared at one of four changes of residence previously to the year 1865, three of such removals being proverbially as bad as a fire.

The writer received an urgent call on the night of July 16, 1855, to attend Miss R. McE. The patient was found to be a girl of fifteen years of age, a native of the United States, of Scotch parentage. She was tall and well developed for her age, of light complexion, and was reported to be usually strong and of active habits, attending to household duties until recently. The mother stated that her daughter commenced womanly development early, and at thirteen years of age showed physical signs of menstruation minus the external flow. This state of affairs continued—that is, such signs of menstruation at intervals of twenty-eight or twenty-nine days onward—up to the above date (July 16, 1855), with increasing difficulty in evacuating the bladder at the supposed periods, but of late dysuria had never been absent, and at the time the writer's assistance was sought the patient had been unable to urinate for nearly forty-eight hours. For the first year nothing had been done to bring on the flow, reliance being placed on Dame Nature, but, as the sufferings of the patient increased in the second year, and as domestic remedies had proved unavailing, advice was sought from the family pharmacist, a graduate in medicine, and at one time an active medical practitioner. He, without seeing the patient, prescribed a ferruginous mixture and recommended active exercise in the open air. No other advice was sought until the writer was called.

The patient when seen complained of great distress caused by inability to evacuate the bladder, together with attendant pressure in the perineal region. Abdominal inspection revealed a tumor similar in appearance to that of a normal pregnancy of six and a half or seven months in a primipara. The enlargement was rather firm, but evidently contained nothing solid. The diagnosis was judged to be retained menstrual blood of long accumulation. As catheterization of the bladder was imperative, an opportunity was offered to verify or disprove the diagnosis.

The vagina was found closed, as was suspected, by an imperforate hymen. After the bladder had been emptied an incision was freely made in the protruding hymen, and thick, dark blood escaped immediately with some force. The after-treatment consisted of rest in bed as long as the flow continued, frequent changes of cloths, and strict attention to cleanliness. A second incision or after-dilatation was not required, and menstruation appeared normally at the next period, and so continued at each succeeding period as long as the patient remained under observation, which was, from time to time, for a period of over two years. Fortunately or unfortunately, as may be, this case was the first and only one met with in the practice of the writer, covering a period of forty years.

Dr. Hemenway, in bringing his paper to a close, states that he is led to suspect "that cases of imperforate hymen are not so rare as is generally imagined, and that many prove fatal without the condition being discovered." The accessible literature on the subject certainly gives no means of coming to a conclusion on this point; it may be, however, that some, or perhaps many, cases have been early detected and treated, for Dr. Barnes, in his work on diseases of women, says (page 177): "I have several times incised an imperforate hymen in infants." Then, since we have so little in literature to guide us in forming an opinion as to the frequency, etc., of this pathological condition, it is to be hoped, if there has been or now is "a chiel amang" us "takin' notes," that "Faith he'll prent it."

301 CARLETON AVENUE.

A CASE OF
IMPERFORATE HYMEN IN A CHILD.*

By ELIZA J. CHAPIN MINARD, M. D.,
BROOKLYN.

ANNA M., aged four years, American, was brought to my clinic by her mother, who stated that there was something wrong with her little girl and wished an examination.

The child was a well-nourished, fat blonde, with a happy, childish face, and had no appearance of invalidism upon inspection. The mother said that she had discovered, while bathing it and powdering it for chafing, that there was "no front entrance" like her other baby girls', and she had taken a friend's advice and sought medical aid.

An examination of the genital organs, which were well formed, showed a complete closure of the vaginal entrance, and that this closure was due to a totally imperforate hymen.

The membrane was slit from before backward, after due aseptic measures, a dressing of iodoform cotton and a T-bandage were applied, and upon the third day the part was healed. There were remnants of the hymen upon the sides of the vaginal opening, and there was a healthy vagina which admitted a Peaslee sound of medium size.

I have also had these cases:

One where the opening was made after a menstrual period, which allowed a flow of a pint of dark, bad-smelling fluid. The patient remained in bed twenty-four hours and made a rapid recovery.

Another, that of a young lady who had a scanty flow every month and was ill always during the time. Upon examining her, there was found a nearly completely imperforate hymen with two small holes on each side of the membrane which admitted a small uterine sound, through which the menstrual flow had drained for four years. The patient had a scanty menstrual habit, which had masked this deformity. Recovery took place without trouble.

The Southern Surgical and Gynæcological Association.—By order of the Council, the annual meeting of the association has been postponed from the 8th, 9th, and 10th, until the 15th, 16th, and 17th of November. It was thought wise to change the time of the meeting from the fact that the 8th of November is the date of the Presidential election.

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* Read before the Fifth District Branch of the New York State Medical Association, May 24, 1892.

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MATTEISM.

In 1878 a certain Count Cesare Mattei published a book on what he denominated Electro-homœopathy, a new system of specific medicine that was based on a fantastic theory of vegetable electricity. This work went through many editions in Italy, and was translated into French, English, and German. The author's disciples found new names for the cult in "Matteism," "proto-electro-matteopathy," and "vegetable electricity." An old castle that he occupied in Italy became the Mecca of many invalids, and the Count pursued his studies and prepared his remedies in a carefully secured room in an isolated tower that was equipped with various weapons of warfare, as well as the more peaceful implements of science. The reason for the parade of weapons was that the Count feared an attempt would be made to wrest his secrets from him.

Impressed by his pretensions and those of his pupils, Lady Paget and Mr. W. T. Stead have separately published papers in certain English periodicals advocating his methods, especially that of curing cancer without resorting to the knife. An investigation committee, consisting of the late Sir Morell Mackenzie, Mr. Lawson Tait, and Dr. G. W. Potter, was appointed by the British Medical Association, and the latter gentleman publishes its report in the *British Medical Journal* for August 13th. It is stated that Matteism was assuming such large proportions in England, where it was practiced even by regular medical practitioners, that the committee, while never doubting the results of their investigation, considered it necessary to give the matter serious and deliberate attention. The Matteists declined to inform the committee of the composition of their remedies, and it was informed that it was not to treat cases, but to see cures and admit their accomplishment. While it was affirmed that cancer would be cured, if still in the "first or second stage," yet patient after patient sent in by the committee was declined on one pretext or another. This put Mr. Stead in the position of having to expose the Matteists in his *Review of Reviews*, if they persisted in declining every patient sent in, so they were obliged to accept five, out of a large number having cancer of the breast, submitted for experiment. A paid registrar watched the patients in detail, from week to week, for a year; and the members of the committee, in turn, regularly inspected them and noted their progress. When Sir Morell Mackenzie died, Mr. H. A. Reeves and Mr. John Hopkins were added to the committee. The patients steadily grew worse just as if no treatment whatever had been used. The Matteists sought in various ways to bring the investigation to a close, and did so at last on the pretext that the committee had broken one of its own rules, with which, however, the Matteists had nothing to do.

Matteism, in the deliberate judgment of the committee, "consists exclusively of vulgar, unadulterated, unredeemed quackery." An analysis of the "electricities," as the potions of the Matteists are called, yielded no other reaction than that of plain distilled water, and the results of their administration confirmed the chemical analysis. The report concludes: "The savage trusts to his amulet; the civilized man, both in the upper and lower circles, submits himself with childish, if not child-like, simplicity to the pretenses of the quack. It is a strange world; but, such as it is, open and honorable medicine has to live and work in it, and must make the best it can of so wonderfully varied an environment."

MINOR PARAGRAPHS.

CHANGES IN MEDICAL LAWS IN MASSACHUSETTS.

In an editorial in the *Boston Medical and Surgical Journal* for July 28th mention is made of the following changes in the medical laws of that State: A law requires that no embalming fluid or substitute therefor shall be injected into the body of any person supposed to have died by violence until the written permission of the medical examiner has been obtained. In committing a lunatic the physician must take oath, at the time the commitment is made, that he is a graduate of some legally incorporated medical college and has practiced three years in the State. A law, as amended, requires inspectors of provisions and animals intended for slaughter or kept for the production of milk, to be appointed annually in April by the mayor and aldermen of cities or the selectmen of towns. It has also been enacted that where a contagious disease among domestic animals was contracted by intention or negligence on the part of the owner or his agent, the animal shall be isolated at the expense of the owner or killed without appraisal or payment; but the owner may be paid a reasonable sum for the killing and burial thereof. It has been enacted that whenever the records of any city or town do not contain the facts relating to a birth, death, or marriage which occurred therein, the clerk or registrar may receive a deposition under oath concerning such facts as are desired for record, and shall file the deposition and record the facts in a book kept for that purpose. The State Board of Lunacy and Charity has been given control over baby farms.

OTACARIASIS, AN AURAL DISEASE OF CARNIVORA.

The editor of *Insect Life* states that he has received from MM. Railliet and Cadiot a pamphlet extracted from the *Comptes rendus des séances de la Société de biologie* for February, 1892, which contains an interesting account of their observations and experiments upon a parasitic disease of the ears in dogs, cats, and ferrets. It is known that certain acarids—*e. g.*, *Symbiotes auricularum*—dwell in the auricular shell and external auditory canal of animals, and cause the infested individuals to scratch violently; in one case which came under their observation the authors attributed to this cause the death, in violent convulsions, of a female cat. They conducted certain experiments with a view of ascertaining the possibilities of transmission of the disease from animal to animal, and found that "otacariasis," as the disease has been named by Neumann, is easily transmitted from diseased to healthy animals of the same species, but with more difficulty between the cat and the dog, and that it does not take place at all between the dog and the ferret. The insects were found in great numbers in the cerumen, and in the experiments were transferred with the wax directly from the ear of the diseased individual to that of a healthy one. The treatment, where any is used, should consist in cleansing the ear with warm soapy water, followed by injections of a five-per-cent. aqueous solution of potassium sulphate.

THE CHOLERA.

At the time of our going to press, on Thursday, the situation in the lower bay justifies a continuance of the confidence, now happily prevalent, that the cholera will not enter the city of New York by way of the harbor. This state of things has been brought about only by the admirable conduct of Dr. Jenkins and his coadjutors. The people, not of the city solely, but of the whole continent, have them to thank for it and them to trust for its further existence. Meantime the detention of cabin passengers on the infected ships is deplorable. One of them, a lady on board the Normannia, justly says, in a letter printed in the *Evening Post* for Wednesday: "We do not complain of our necessary detention, but to leave four hundred and eighty men, women, and children cooped up here in contact with infection, without medical inspection, or supervision, or disinfectants, or fresh water, or hospital boat, or regular communication with the shore, is a crime of the worst kind. It is pitiable to see the situation of the ladies and children, though they are still all well. But the clean clothing is giving out, and there is no means of replacing it." It is gratifying to learn, even at this late day, that these passengers will probably soon be quartered in safety and comparative comfort at Sandy Hook or, preferably we should say, on Fire Island, as Dr. Jenkins is reported to favor.

THE NATIONAL QUARANTINE.

Now that the United States Government has taken a hand in the matter of quarantining vessels in the bay of New York, it becomes pertinent to inquire why it has not been done in the regular and, as it seems to us, only legal way—namely, by the Surgeon-General of the Marine-Hospital Service, an officer of experience and of known excellence. If that officer has been purposely ignored by the Secretary of the Treasury, it is an affront to every officer in the service and indirectly to the whole medical profession of the country, as well as a menace to the efficiency of the general government's action in the matter.

THE TEACHING OF PHYSIOLOGY IN THE SCHOOLS.

The Wisconsin State Board of Health has declined to give an indorsement to certain so-called physiological text-books designed to be introduced into the public schools. The opinion of the board is that some of these books contain unscientific and misleading teaching.

ITEMS, ETC.

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from August 21 to August 27, 1892:*

By direction of the Acting Secretary of War, so much of Par. 9, S. O. 194, August 18, 1892, A. G. O., as relates to change of station of Maus, Louis M., Captain and Assistant Surgeon, is suspended until further orders.

Brown, Paul R., Major and Surgeon (Fort Supply, Indian Territory), is granted leave of absence for one month, to take effect on or about September 1, 1892.

Corson, Joseph K., Major and Surgeon. The leave of absence granted is extended one month.

Greenleaf, Charles R., Lieutenant-Colonel and Deputy Surgeon-General, now at Montpelier, Vermont, will proceed to Plattsburgh Barracks, New York, on business connected with the medical department, and on completion thereof will return to Montpelier.

Reed, Walter, Captain and Assistant Surgeon, upon the arrival of Mason, Charles F., First Lieutenant and Assistant Surgeon, at Fort Snelling, Minnesota, will be relieved from duty at that station, and will report in person to the commanding general, Department of Dakota, for duty as attending surgeon and examiner of recruits at the headquarters of that department.

Shillock, Paul, First Lieutenant and Assistant Surgeon, now on temporary duty at San Carlos, Arizona Territory, is relieved from duty at Fort Grant, Arizona Territory, and assigned to permanent duty at San Carlos, Arizona Territory, relieving Jarvis, Nathan S., First Lieutenant and Assistant Surgeon.

Lieutenant Jarvis, on being relieved by Lieutenant Shillock, is ordered to Fort Apache, Arizona Territory, for duty, relieving Maus, Louis M., Captain and Assistant Surgeon. Captain Maus, on being relieved by Lieutenant Jarvis, is ordered to Whipple Barracks, Arizona Territory, for duty.

Johnson, Richard W., Captain and Assistant Surgeon, is relieved from duty at Fort Bayard, New Mexico, and ordered to Fort Bowie, Arizona Territory, for duty at that station, relieving Wales, Philip G., First Lieutenant and Assistant Surgeon.

Lieutenant Wales, on being relieved by Captain Johnson, is ordered to Fort Bayard, New Mexico, for duty at that station.

Naval Intelligence.—*Official List of Changes in the Medical Corps of the United States Navy for the two weeks ending September 3, 1892:*

Rush, C. W., Passed Assistant Surgeon. Relieved from special duty in connection with the Intercontinental Railway Commission and ordered to the Navy Yard, New York.

Marsteller, E. H., Passed Assistant Surgeon. Detached from Practice-ship Constellation and ordered to the Naval Academy.

Stoughton, James, Assistant Surgeon. Detached from Practice-ship Constellation and to wait orders.

Arnold, W. F., Passed Assistant Surgeon. Ordered to Naval Station, Port Royal, S. C.

Griffith, S. H., Passed Assistant Surgeon. Detached from the U. S. Steamer Jamestown and ordered to the U. S. Steamer Constellation.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending September 6, 1892:

DISEASES.	Week ending Aug. 30.		Week ending Sept. 6.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	0	0	0	0
Typhoid fever	37	11	40	16
Scarlet fever	39	1	38	4
Cerebro-spinal meningitis	6	2	0	3
Measles	72	13	50	9
Diphtheria	64	18	66	7
Small-pox	7	2	13	3
Varicella	0	0	0	0
Whooping-cough	0	0	0	0

Letters to the Editor.

THE TREATMENT OF TYPHOID FEVER.

Morristown, N. J., *August 12, 1892.*

To the Editor of the New York Medical Journal:

Sir: An original communication by Dr. Gustavus Eliot, of New Haven, Conn., entitled The Specific Treatment of Enteric Fever, was published in No. 714 of the *Journal.* The main contention of the paper is expressed in the title, and with this portion of the paper the writer is not at present concerned, There are, however, certain *ex cathedra* statements—three times repeated in varying language—that seem to demand a protest. not only because they are opposed to authority and experience, but especially because the acceptance of his ideas would inevitably tend to unscientific and therefore unsafe treatment.

The author's first dictum is that enteric fever should be treated specifically; that the remedies should be given early, and duly continued until convalescence is established. Whether the second assertion—the special subject of review—is made to fit the necessities of the first or not does not matter; the fact remains that it is a mere postulation. It is therein maintained that it is not only possible to make a diagnosis of enteric fever at the first visit, but that “with a reasonable amount of care it is just as easy to make a diagnosis of typhoid fever the first time the patient is seen as it is to make a diagnosis of pneumonia at the first visit.” In another place the statement is even stronger. “But if one wishes to treat typhoid fever with the best results he, must make a correct diagnosis the first time the patient is seen. . . . Progress in the treatment of enteric fever has been hindered by certain prevalent but erroneous teachings of the schools and text-books. The most important of these mistaken notions is that the early diagnosis of the disease is difficult; a second is that the course of the temperature furnishes in the majority of cases any considerable aid in diagnosis. . . . It is not necessary to wait three or four days so as to observe the course of the temperature. This will seldom throw much light upon the nature of the disease.” (!)

It is admitted in one place that “one may not be correct every time, but it is far better to occasionally keep a man in bed for a day or two than to allow one who has typhoid fever to walk about for three or four days.” “Suppose that later developments prove that the patient has *not* had typhoid fever. Very well; a mistake has been made, but no harm has been done.”

Now, if one may not be correct every time, it would seem wiser and better for one to be reasonably certain of being correct every time before he begins specific treatment of any kind.

“Schools and text-books,” as well as the experience of the average practitioner, teach the latter that it is often difficult and sometimes impossible to state whether a given case is or is not enteric fever; and when a regular graduate in medicine of twelve years' experience inferentially implies that he is always able to make a diagnosis of enteric fever at the first visit, and makes the further contention that it is so easy that every other educated physician should do so, he subjects himself to the risk of far harsher criticism than the undersigned has seen fit to indulge in. P. C. Barker, M. D.

A SUGGESTION AS TO CHOLERA.

415 West End Avenue, New York, *September 6, 1892.*

To the Editor of the New York Medical Journal:

Sir: Considering the nearness of the cholera to our shores everything connected with the admirable quarantine regulations being enforced has great interest attached thereto, and everything is being done that seems possible to be done to check its advance, but from the daily papers it seems that there is one thing further which might be done—*i. e.*, the burning of all refuse, especially of the steerage passengers, in the furnaces of the vessel, or, if that is not possible, its being taken to some island and there disposed of by fire.

The germ seems to be able to exist very well in water, and thus existing with full vitality to be floated by currents to contiguous shores, where it is ready to thrive under favorable conditions and would be a menace not only at the present time but in the coming summer.

I make this suggestion because I feel it my duty, as you can draw attention to a laxity or seeming one in this connection.

W. S. Gardner, M. D.

TRAINED NURSES.

333 East Twentieth Street, New York, *August 18, 1892.*

To the Editor of the New York Medical Journal:

Sir: In reference to Dr. Emerson's article, Phases of Nursing, in the *Journal* for July 9th, can the doctor have a real knowledge of nursing, or would he not know that in each school of nurses there is a superintendent who will receive and investigate complaints against its graduates?

Commendation also is appreciated, but we do not expect that from the tender-hearted philanthropist who regrets that the moderately poor can not afford the trained nurse, and hopes “that the great demand for well-trained nurses may, in the near future, lead to such an increase in them that competition will materially reduce their wages.”

Evidently we are so far removed, in one direction or the other, from the moderately poor class as to be debarred from the kindly consideration of Dr. Emerson, but his expressed hope leaves little doubt as to the direction in which he would like us to be removed.

Where are our champions? The dear professors, mild-faced, generous, who, having nothing to fear for their reputations, say of a nurse that she is invaluable. Won't some great big man please tell Dr. Emerson that we are worth many times our money? Sarah R. Jennings.

Proceedings of Societies.

NEW YORK SURGICAL SOCIETY.

Meeting of May 25, 1892.

The President, Dr. Arpad G. Gerster, in the Chair.

Resection of Intestine for Carcinoma and Double Intussusception.—Dr. Frank Hartley presented a report of a case and showed the patient and the specimen. The patient was a woman thirty-two years old. She had been admitted into the New York Cancer Hospital on March 27th. A month before, she had had severe abdominal pains. Upon examination by the rectum, a large pedunculated tumor was felt. On the following day she was anæsthetized, and the diagnosis made by bringing down the gut. Three or four days later, the patient having been properly prepared, a median incision was made into the abdominal cavity. The double intussusception and circinoma were found, and one intussusception was reduced; then a longitudinal incision was made in the gut over the intussuscepted carcinoma. The carcinoma and the greater part of the intussuscepted gut were excised, leaving about an inch and a half of the intussuscepted gut in position. The two ends of the gut were then sutured together by sewing entirely through both portions of the gut with a silk suture, according to Mounsell's method. These sutures were covered over by a part of the omentum, held in place by superficial sutures. The longitudinal incision was then closed, also the abdominal cavity, and the patient removed to bed. The time spent in suturing was thirty minutes.

The patient reacted well, and the temperature did not go up to 100° F. Seven or eight days after the operation the patient had a movement of the bowels. Several times afterward it was necessary to remove impacted fæces from the rectum with the hand. It was now two months since the operation, and the patient was in excellent condition.

Removal of the Superior Maxilla and Cheek for Carcinoma, and a Plastic Operation to Cover the Defect.—Dr. Hartley also presented a man sixty-six years old. Fifteen months before, the speaker had removed the superior maxilla and the greater portion of the cheek on the left side. He had done skin-grafting as far as possible, but there still remained a large open surface. A month before, the patient had returned to the speaker for the purpose of having the wound closed, if possible. The wound was freshened and a large flap taken from the neck with which to close it. The flap measured about four by six inches. The flap was sutured in position and dressed in a salt solution. The wound of the neck was covered with skin-grafts and also dressed with the salt solution. In two weeks the pedicle was cut. The flap and grafts had all grown satisfactorily. These large non-vascular flaps from the neck usually sloughed.

Dr. B. F. Curtis mentioned two cases in which he had taken flaps from the neck after an operation for carcinoma. He congratulated Dr. Hartley upon the result achieved in the case presented. In the speaker's first case, where an epithelioma had been removed from the cheek by excision and caustics, a deep, unsightly cicatrix had been left. In order to fill this, a large flap was taken from the right side of the neck, extending well up to the angle of the lower jaw. This flap sloughed completely off to within half an inch of its base. After this the speaker performed Bardenheuer's operation, including the angular artery in the base of the flap, thus making it very vascular. The flap grew in its new place, and the result was very satisfactory.

In the second case, at the Cancer Hospital, in February, the greater part of the superior maxilla, with the cheek, was removed for carcinoma. In this case, as in the one first mentioned, the flap was taken from the forehead. The result had been very good. The speaker had hoped that there would be no contraction of the cicatrix, but he had been disappointed. The patient used a cork wedge several hours daily to overcome this contraction.

Salicylic Acid in the Treatment of Chancroidal Bubo.—Dr. Frederick W. Gwyer presented a patient upon whom he had practiced this treatment. The patient, a man, aged twenty-two years, had entered Bellevue Hospital on April 20th. He had had connection with a woman five days before the appearance of a chancroid on the penis. Five days later a bubo had developed in the left inguinal region. At the time he entered the hospital an inflamed, fluctuating chancroidal bubo of the size of a hen's egg was found. Crystals of salicylic acid were applied to the sore on the penis. In a few days the active symptoms of the bubo had subsided and the tumor had diminished in size. Shortly afterward the tumor entirely disappeared and now not a sign of any trouble existed. The speaker thought the acid was absorbed by the lymphatics and carried to the enlarged glands. By this method of treatment objectionable scars were avoided. He had treated many other cases in the same way with equally good results.

Tubercular Inflammation of the Salivary Submaxillary Gland.—A specimen was presented by Dr. Frederick Kammerer, who said he had never seen or heard of a similar case. The tumor had been removed from a woman who had had tuberculosis of both elbows, one knee, and the spine. No microscopical examination had been made, as the miliary tubercles had been convincing.

Branchiogenic Tumors of the Neck.—Two specimens were shown by Dr. Hartley. The first was from a child, three years old, who had been seen by him in consultation. The child's mother said the tumor had been present since the child was eight months old, and had never given rise to any trouble. On examination, a fluctuating tumor was found below the hyoid bone and anterior to the sterno-cleido-mastoid muscle, probably beneath the sterno-thyreoid and the hyoid muscles. It was movable over the vessels of the inferior carotid triangle. It seemed to be attached to the hyoid bone. It was not translucent and was not attached to the skin. The skin over the tumor was normal. A vertical incision was made over the tumor through the skin and subcutaneous tissue, then a horizontal incision through the sterno-hyoid and thyreoid muscles. Enucleation of the tumor, which was loosely attached to the sheath of the vessels and to the thyreoid gland and closely attached to the antero-lateral surface of the hyoid bone, was accomplished. Dr. Freeman, of the pathological department of the College of Physicians and Surgeons, had made the following report of the microscopical examination: "The wall of the cyst varies from ten to twenty-five millimetres in diameter. It consists of connective tissue, with a small amount of lymphoid tissue interspersed. In places a lining of epithelium exists, which consists of a thick layer of squamous epithelium, beneath which is a thinner layer of epithelium approaching the columnar form."

The second specimen was from a girl, aged sixteen, who had been admitted into the Roosevelt Hospital in September, 1891. She told the speaker that for five years she had had a tumor in the neck, which had gradually been increasing in size. It had given her no discomfort, and, except for its disfiguring effect, she would not have it removed. She had been referred to the hospital as having cystic goître. On examination, a semi-fluctuating tumor, situated mainly in the median line but encroaching slightly upon the left side, was found. It was not attached to the skin and was slightly movable upon the thyreoid gland, but was attached closely to the underlying tissue upon the left side. It was not translucent. Its size was about six centimetres by three fifths of a centimetre. An incision was made in the median line, through the skin and subcutaneous tissue; then a horizontal incision was made through the sterno-thyreoid. Exposure and enucleation of the cyst wall were easily accomplished, except at the left side, where its attachment to the sheath of the vessels was very close. Dr. Freeman's report of the microscopical examination was as follows: "The wall of the cyst is about ten millimetres in thickness. The thickness of the wall varies somewhat in different parts. The wall consists of connective tissue and contains large blood-vessels. It has a thick lining of squamous epithelium. The upper layers have in places a somewhat columnar form. The superficial layer is covered by degenerated epithelium. The cyst contains a white material which consists of degenerated desquamated epithelium."

Dr. Hartley referred to his paper upon Congenital Tumors of the Neck, read before the society on April 15, 1891. He considered the structures as remnants of the right and left sinus cervicalis, near their point of union with the thoracic wall. This he thought to be a fact, not only from their location, but from their relation to the sterno-hyoid and sterno-thyreoid muscles, as well as to the sheath of the carotid artery.

The Precipitation of Tubercle Bacilli by Centrifugal Force.—The President showed an instrument with which he could rapidly deposit the tubercle bacilli of urine or any other fluid on the bottom of a test tube, whence they could be removed with a pipette and examined microscopically in the ordinary way. He did not claim anything original in the instrument or its use, but exhibited it because the method had not been spoken of in a recent paper on the methods of examining tubercle bacilli. The instrument made a thousand revolutions a minute. It took about five minutes' action to precipitate the bacilli. Of course, all the solid matter in the fluid would be precipitated along with the tubercle bacilli. He had often been able to clear up an obscure urinary trouble in a short time by examination of the urine in this way.

Dr. Lilienthal isolated the bacilli from some tuberculous urine during the meeting and exhibited them under the microscope.

Dr. W. W. Van Arsdale said that where the bacilli were found only in the pus cells this method would not do, as the pus cells were not precipitated by the instrument. In such cases the old method would have to be used.

New Inventions, etc.

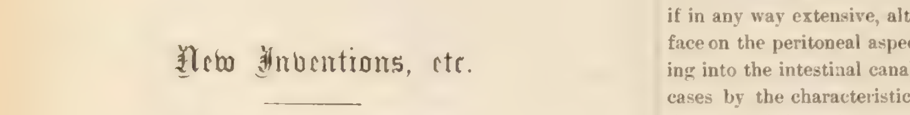
A NEW CABLE CARRIER.

By William Davis Foster, M. D.,

KANSAS CITY, MO.

Every surgeon who has attempted to remove tumors from the interior of the uterus is familiar with the difficulties to be overcome. When écrasement is resorted to, the success of the operation depends upon the division of the pedicle close to the endometrium. In those cases presenting a short, yielding, and thick pedicle it is a very tedious affair to accomplish this. Unless the pedicle is cut short, the tumor will recur by repullulation.

The cable carrier is shown in the cut. It consists of a staff eight inches long and a handle four inches long. Near the end of the staff is a slot through which the cable plays freely. The slot is closed by a Reverdin slide, operated by a button and spring, as in Keyes's needles. The distal end of the slide enters the metal at the distal side of the slot, to give firmness to the slide when the cable is in use. The instrument may be used as follows: Take a firm hold of the neoplasm with a strong tenaculum or volsella; pass this to an assistant, who will make steady traction; place the wire or cable in the slot; carry the loop over the tumor up to the base of the pedicle on the *anterior* aspect of the tumor, where it is held; let an assistant now adjust the *serre-nœud*, slide it along the cable on the *posterior* aspect of the growth until the distal end is arrested by contact with the pedicle; anchor the cable securely to the pivot through which the screw passes; put the screw in operation until sure the grasp of the cable is correct; retract the slide; disengage and remove the cable carrier; continue the operation of the screw until the pedicle is severed. Deliver the tumor with forceps—obstetrical or other—as circumstances require. No hæmorrhage need be apprehended.



I am indebted to Dr. E. H. Pratt, Chicago, and George Tiemann & Co., New York, for valuable and useful suggestions, and to the latter for practical elaboration of all these *ideas* into the perfected instrument depicted.

Miscellany.

Mishaps in the attempted Reduction of Strangulated Hernia by Taxis.—In a clinical lecture on The Difficulties and Dangers which may arise from Indiscriminate Attempts at the Reduction of Strangulated Herniæ by Manipulation (*Lancet*, August 20th), Mr. William H. Bennet of St. George's Hospital, reports a case of intestinal laceration by pro longed unsuccessful taxis, and another in which the hernia was com plicated with a large hydrocele the wall of which was ruptured by th patient, who attempted to reduce the hernia. Mr. Bennett proceeds a follows in his remarks on the main possible disasters that may imme diately follow upon attempts at the reduction of a hernia by taxis:

"1. *Bruising of the Bowel.*—Some bruising, as shown by subper toneal extravasation, of large or small extent, about the herniated bow will be found in the majority of cases which have been submitted to tax unless extreme gentleness only has been used. The extent and severit will naturally depend, for the most part, upon the amount and directio of the force applied, and to a considerable degree upon the condition the gut, which bruises more readily when greatly distended, especiall in neglected cases which have been allowed to continue for a long perio without treatment. It is interesting to note that bruising of the bowe if in any way extensive, although without any apparent breach of su face on the peritoneal aspect, is almost invariably associated with blee ing into the intestinal canal, a fact conclusively demonstrated in man cases by the characteristic appearances of the first motion passed afte the relief of the stricture, which nearly always contains altered blood. may, in fact, be accepted without reserve that attempts at reduction b manipulation produce some bruising of the bowel in the great majorit of cases of strangulated hernia. At the same time it may be fairly ac mitted that, as a rule, unless great carelessness has been used, n permanent harm results. It is nevertheless necessary to insist on th occurrence of injury of the kind in order to give weight to the fact th attempts at reduction by manipulation are liable at times to cause i jury. Taxis, therefore, should not be regarded, as it seems to be b some people, as a plan of treatment which if it fails to reduce th rupture, at least can do no harm. This last remark must not be take to imply any objection to the proper practice of this method, but merel as a warning against its use carelessly and without due regard to po sible evils which may under certain conditions result.

"2. *Laceration of the Bowel.*—This may of course involve the whol thickness of the intestinal wall or only one or more of its coats; th former is naturally the most serious since it allows of the escape fæces into the sac. The latter condition may vary in degree from a almost imperceptible crack in the perito næum to a laceration in the peritonea and muscular coats inches in length, i which case the mucous coat protrude hernia-like, through the opening in th muscular wall. Whether the laceratio is partial or complete, the treatment i identical. The edges of the wound must be brought together wit Lembert sutures, care being taken that the end stitches—if the lesio is of any extent—are placed a short distance beyond the extremities the rent. When the gut is too tense to allow of approximation of th peritoneal surfaces it should, if necessary, be emptied in the way I hav described in the first of the cases which form the text of this lecture However small the crack in the peritonæum is, even if it be hardly pe ceptible to the eye, a single suture should be passed across it. If th condition of the patient in cases of partial laceration is so desperat that the delay entailed by the suturing process is not justifiable, the gu should be cleansed and returned into the abdomen, an unperforate drainage-tube of large caliber being left lying in the canal in the way have recommended in a lecture published in the *Lancet* in 1890.

"A point of great interest to which sufficient attention has not, think, of late been paid arises here with reference to the situation a which laceration from injury occurs in these cases. There appears t be an idea, which is traditional and supported by the teaching of th schools now, that the tear produced by injury in the gut of a strangu lated hernia takes place *at the seat of stricture* in consequence of th way in which the sharp edges of the constricting tissues, as it were, cu into the distended bowel when pressure is exerted upon it.

"Now, I have seen several cases myself in which a rent in the gu was undoubtedly produced by taxis, and in two of these the lesion *wa not at the point of constriction but on the prominent bulging and mos distended portion of the bowel.* Both of these cases were recent, and h each the rent was in the long axis of the gut. The same result followed in some experiments made by me on the cadaver, artificial strangulation in two cases of old herniæ having been produced by inflating the bowel from the abdomen and forming a stricture by ligaturing the neck of the sac together with its contents. The hernia was in one instance then violently crushed and in the other struck sharply with a stick; in both the laceration occurred on the prominent part of the strangulated knuckle and in the long axis of the gut. On consideration, this result, so far as the situation of the injury is concerned, is, I think, precisely what should be expected in recent cases, for in such the rent begins in the peritonæum, which under pressure naturally gives way at the weakest point—that is to say, where it is most thinned and stretched by distention. A sudden blow, therefore, or prolonged hard pressure, would, as a matter of course, lacerate the peritonæum in the part most stretched and thin—*i. e.*, over the end of the distended knuckle rather than at the seat of constriction, where not only is it unstretched, but where it is actually supported by the surrounding parts.

"In cases far advanced and neglected the state of affairs is altogether different, because in them the gut at the seat of stricture is indented by the edge of the constricting tissues, partially eaten through by ulceration from within, or perhaps gangrenous and on the point of giving way. Then the weakest point is at the strictured part, and very little force may be necessary to complete the perforation which has already commenced. It is, I presume, in connection with cases of this latter kind that the traditional teaching has been fostered, for in recent cases of strangulation it certainly does not apply.

"3. *Rupture of Adhesions in the Sac.*—The tearing of recent adhesions during attempts at reduction by manipulation need not have any serious result, but free hæmorrhage into the sac may thus be produced so as to fill it completely with blood, although no serious lesion may be apparent. In old irreducible herniæ, in which band-like adhesions sometimes exist between the bowel and the sac wall or between different parts of the bowel itself, no harmful results need follow if the adhesions themselves give way, but if, as may happen, an adhesion brings away some of the intestinal peritonæum with it, a partial laceration of the gut results, which is, if at all extensive, a serious condition, especially if the case has been neglected and operation long deferred.

"4. *Rupture of the Sac.*—This, although a recognized injury and classed as one of the modifications of the reduction *en masse*, must be a very rare sequence of taxis, as the amount of force required to tear the sac is very great and would hardly be intentionally applied. Bruising of the sac is, however, common, and I have seen a portion of its wall torn away with an omental adhesion; this, however, is not a rupture in the sense under discussion—*i. e.*, a splitting of the sac wall from sudden or gradual pressure. In the post-mortem room I have not been able in artificially strangulated herniæ to rupture the sac without also bursting the gut. Rupture of the sac is therefore probably too rare to be other than a curiosity; indeed, Sir Astley Cooper, after his large experience, says that it 'scarcely ever' occurs from any cause. Formerly spontaneous rupture of the sac was also a recognized condition, but actual evidence of its existence seems wanting, or at all events is not convincing.

"5. *Hæmatocele.*—A good example of this accident is afforded by Case 2, described in this lecture. After what I have said concerning the difficulty in causing rupture of a hernial sac it may at first sight seem strange that the sac of a hydrocele should give way so easily. There is nothing inconsistent, however, in this, for it must be borne in mind that the sacs of hydrocele sometimes undergo pathological changes which result in softening and thinning, so that they become weak in parts.

"6. *Hæmatoma from Rupture of a Large Vein or Veins Outside the Sac.*—Enormous blood extravasation may be thus produced, and occasionally upon the application of comparatively slight force, especially in elderly people. I once had an opportunity of seeing a large blood swelling involving the scrotum and groin, which were nearly black from discoloration, said to have followed upon nothing more violent than the manipulation necessary for the adjustment of a truss to an easily reducible hernia in a subject nearly eighty years old.

"7. *Reduction 'en bloc'—i. e., the Reduction of the Sac, together with its Contents, the Strangulation being therefore Unrelieved.*—The only point to which I need here call attention in this respect is the singularly small amount of force which sometimes seems necessary to produce this accident. I have personally seen only one case, and that was not in my own practice. The hernial tumor seemed to disappear almost the moment the hand was laid upon it, and certainly before there was time for the application of any methodical violence. So much was this the fact that I can not help feeling that there must be in such a case some kind of spontaneous action from above which contributes to the reduction. Is it possible that extreme irregular spasmodic attempts at peristalsis may act in this way?

"It is only fitting that such an ominous list of casualties, which are not only possible, but actually occur in practice as the result of the use of taxis, should be followed by some indication as to when and how the reduction of an irreducible hernia by manipulation may be attempted without risk. The relative safety of this plan of treatment is dependent on three conditions: (1) The manner in which the taxis is applied; (2) the period during which the manipulation is persisted in; and (3) the state of the hernia.

"1. *The Mode of applying Taxis.*—This may appear such a purely elementary point as to render its consideration hardly justifiable outside the pages of a student's text-book. It is nevertheless true that practitioners, otherwise intelligent and trustworthy, do at times manipulate a hernia in the manner best calculated to cause injury to the contents of the sac, while it affords the least possible chance of effecting reduction. I do not propose to occupy time now with a description of the method by which the taxis may be applied safely and with a fair prospect of success, as it can be more usefully learned from practical demonstration at the bedside, but some of the details of the process are so important and essential that they require a passing notice. The details referred to are as follows: (*α*) All manipulations should be conducted only with thoroughly warm hands; (*β*) the neck of the hernia should be firmly supported by one hand while the other manipulates the body of the tumor; (*γ*) in using the fingers all pressure from the finger-ends should be made by *the front of the digital pad and never by the actual tips;* (*δ*) the pressure necessary in the manipulations should be gentle, firm, and regular, not forcible, unsteady, and spasmodic. The necessity for warm hands, for the support afforded to the neck of the hernia, and for the avoidance of the use of the actual finger tips, is, I can not help feeling, not so universally acknowledged as it certainly should be, for I have more than once seen attempts made at the reduction of a rupture by grasping the body of the tumor with hands almost blue with cold, the neck of the hernia being left entirely unsupported, and then with a punching and rolling movement, during which the finger tips have been deeply pressed into the parts, the force has been gradually increased until further persistence in the attempt has been rendered impracticable by the protests of the patient. Where injury is possible it is from some such faulty plan as this that it is most likely to result. The cold hands excite every resistance in the way of muscular action; the want of support to the neck of the hernia makes its reduction very unlikely by allowing the gut to bulge over the margins of the constricting ring, and, beyond this, in neglected or long-standing cases, when the bowel has commenced to ulcerate from within, the pressure of the sharp edges of the stricture acts at a great advantage in further injuring and perhaps bursting the thinned and weakened intestinal walls. Finally, the sharply indenting finger tips are admirably adapted for causing an unnecessary amount of bruising and possibly laceration of the gut.

"2. *The Time which should be occupied in Taxis.*—Judging from my own experience, and from what I have seen in the practice of others, five minutes should be taken as the outside limit during which manipulation of a hernia in cases of apparent strangulation or when impulse on coughing is absent may be with safety persisted in, no matter how gently it is applied. In unstrangulated cases the same time should always be considered as sufficient, for, although no actual harm need result, if the time be extended it may very easily produce it; moreover, if success is not attained by the end of five minutes it is very unlikely to result at all, and further attempts are practically useless.

"3. *The Condition of the Hernia.*—When properly applied and with the precautions just mentioned taxis may be used with safety—(*a*) in all cases in which the true hernial impulse is present, provided always that there is neither any marked tenderness nor inflammation in the sac or its contents, when its employment would of course be entirely negatived; (*b*) in very recent cases of strangulation where the tension is not extreme. This latter is a recognized principle and is therefore worthy of respect, but I very much doubt whether it is possible, excepting perhaps in infants, to reduce by manipulation any rupture in which the hernial impulse is not present. For myself at least I must admit that I have never been able to return with any reasonable application of force a hernia in which I could detect no impulse. This impulse, it is true, may have sometimes been slight, but it was present all the same in the cases where reduction was possible, although it must be admitted that I could not always demonstrate it to my house surgeons in the hospital patients. A large distended hernia universally resonant should be treated with more than usual gentleness, for in such cases the bowel is far more liable to injury than in any other kind, especially if adhesions happen to exist in the sac. Hernial tumors dull on percussion, with omental or fluid contents, may be manipulated with greater freedom without much risk of damage being done, but in these reduction is entirely out of the question in the absence of impulse; the utility therefore of persistence in the attempt at all under these circumstances is not plain. Every case of apparently strangulated hernia must necessarily be treated upon its individual merits, but, for my own part, I am sure that, as a general principle, it is better in herniæ which are obviously strangulated and entirely without impulse to perform herniotomy at once rather than make attempts at reduction by manipulation, because I have no doubt whatever that early herniotomy in fairly competent hands is infinitely less hazardous than an unwise persistence in fruitless attempts at reduction by taxis. If due regard be paid to the patient's welfare, one thing at least is certain—viz., that a strangulated hernia which has once been subjected to taxis should be operated upon at once, and no further manipulation used until after the tumor has been explored and the stricture freely divided.

"It must not be imagined that all risk of lacerating the bowel during attempts at its reduction necessarily ends after the sac has been laid open in herniotomy, or indeed in every case after the stricture has been divided, for, although to the best of my knowledge the accident has not occurred under these circumstances in my practice, I have been present at an operation in which a surgeon of experience certainly did produce a laceration in the peritoneal coat of the bowel while attempting to reduce it after the division of the stricture which obviously gave rise to the strangulation. This difficulty sometimes experienced in reducing the hernia after the stricture has been cut is undoubtedly as often as not due to the division being not sufficiently free, the little nick so commonly recommended being too slight for securing the necessary relaxation of the constricting band. I am sure, from my own observation, that harm is more often likely to arise from too slight a division of the stricture than from one which is too free. Free division of the parts about the neck of the hernia as a rule entirely obviates any chance of injury to the gut, while the possible anatomical dangers entailed in this free incision have been, I have no hesitation in saying, unduly exaggerated.

"Although I make a practice of dividing the stricture freely, I have never had the slightest cause to regret it, and certainly have never seen any hæmorrhage which has given the least anxiety under these circumstances. The only case in which I have had any trouble whatever on account of bleeding after herniotomy was a strangulated umbilical hernia, in which alarming hæmorrhage took place into the abdominal cavity from a torn omental vein. This vessel was almost certainly burst by the force which was necessary for the return of the hernia through a ring which had been only slightly divided; had the division been altogether more free the hernia could have been reduced without any force and the vessel would, I believe, have undoubtedly remained intact.

"I now come to a point which is especially interesting in connection with a further difficulty which occasionally arises in the reduction of a hernia, even after the stricture has been freely divided. At first sight it is a singular fact that any difficulty should occur at all under these conditions, still it is quite certain that it is sometimes met with. For instance, in a case of inguinal hernia under my own care I was unable, after repeated division of the stricture, to reduce the intestine, although on passing the finger, as is my habit, through the canal into the abdominal cavity, I could feel nothing in any way constricting the bowel. The only noticeable thing to be felt was a loose membranous fold which, springing from the outer wall of the canal, lay quite flaccid upon the gut, and allowed my finger to pass by it with perfect ease. While I was attempting to return the bowel, the end of one finger being placed on it just below this fold, I noticed that as the gut was pushed against the flaccid flap the latter seemed to grip the bowel after the manner of a sling. I therefore divided the fold, and then returned the hernia without the least trouble. Here, then, the obstacle to reduction was clearly this loose sling-like fold. The existence of membranous flaps like this and the manner in which they sometimes resist the return of the gut in operation for strangulated hernia have not of late received the attention they merit. Bands and flaps of this kind, which are not very rare, should invariably be divided whether they seem to compress the bowel or not, for if they do not actually prevent reduction it will be much more easily effected after their division. The history and mode of formation of these interesting folds may be conveniently reserved for consideration in another lecture."

Jejuno-gastrostomy.—In the July number of the *Australasian Medical Gazette* Mr. George T. Hankins, of the Prince Alfred Hospital, Sydney, reports the case of an engineer, forty-five years old, who was admitted into the hospital on June 15, 1891, having been ill for fourteen weeks. His illness had begun with vomiting, which occurred an hour or two after taking food. He vomited matter resembling sour water.

He had lost much flesh and had become very weak. He did not eat much, on account of the pain, which came on an hour or two after taking food, but was relieved to some extent by vomiting. The vomited matter was on one occasion dark like coffee grounds, and the motions were dark. Pain was complained of all over the abdomen.

A hard mass was felt in the epigastric region, extending to the right hypochondriac region about an inch above the level of the umbilicus. On deep inspiration the mass was felt to roll beneath the hand.

Mr. Hankins operated on July 1st. The stomach had been irrigated daily for some time with much relief. Ether was the anæsthetic used, and the abdominal cavity was opened by an oblique incision in the right hypochondriac region, parallel with and about two inches below the margin of the costal cartilages. This incision exposed the upper surface of the right lobe of the liver, the suspensory ligament being seen at its inner extremity. The edge of the liver had to be raised to bring the stomach into view. An elongated mass, about two inches thick and perhaps about three inches in length, occupied the position of the pylorus, but the bulk of the growth seemed to be posterior to the lumen of the gut. The mass was movable with respiration, but extended into the fixed portion of the duodenum. The omentum was drawn toward the left and the hand passed down along the course of the duodenum until some bowel was reached with mesentery long enough to enable it to be drawn up to the level of the stomach. A loop of bowel was then emptied by pressure, and two ligatures of India-rubber tubing, passed through openings in the mesentery, were applied about three inches apart. An incision an inch long was made in the long axis of the bowel at the border furthest removed from the mesenteric attachment, and one of Senn's decalcified bone plates, armed with the four silk ligatures, slipped in, the lateral threads being passed through all the coats of the bowel from within outward, and the two end ones brought out through the incision without perforating the coats of the bowel. This portion of bowel was then protected with warm sponges, and a similar incision was made in the wall of the stomach about three inches from the pyloric end on the anterior surface. Another plate was here introduced and fixed as already described. The corresponding ligatures of the two plates were then tied together, beginning with the deeper lateral ones, then the two ends, and lastly the upper lateral ligatures. A few Lembert sutures were then inserted along the upper edges of the plates, but where they seemed most necessary—viz., along the lower borders—they could not be placed, as these edges were shut off by the mesentery. The plates, however, seemed to be in good apposition, and the abdominal incision was closed by sutures of fishing gut.

On the tenth day the patient could not sleep, was very thirsty, and coughed a great deal. The nurse, noticing some discharge on the dressings, removed them and found the abdominal incision gaping. Mr. Hankins happened to enter the ward at the moment and found that the edge of the liver, acting as a valve, had shut off the abdominal cavity. The edges were drawn together with strapping, leaving a gauze drain between the lips of the wound.

In October, three months after the operation, the abdominal wound was completely closed and the cicatrix had undergone contraction so that the scar was no wider than would have resulted from slightly delayed union. The patient was able to walk about the veranda of his ward, but was still too feeble to go up stairs. He was taking meat and a mixed diet, but lately he had again been complaining of pain toward evening, with flatulence and the occasional vomiting of acid water. These symptoms were generally relieved by some alkaline stomachic. Mr. Hankins was inclined to attribute the discomfort to increase of the growth or to adhesions interfering with the peristaltic movements of the intestine. The bone plates were never seen in the motions.

In February, 1892, all the original symptoms had gradually returned, and the patient died on the 19th, seven months after the operation.

Post mortem, a growth was found in the head of the pancreas, involving the walls of the intestine (duodenum), and the pyloric end of the stomach was somewhat thickened. The pylorus itself was fairly free, admitting the forefinger. On passing the finger through the pyloric ring the finger entered a loculus, and then there was a constriction of the first part by the duodenum, caused by the involvement of the growth. The bowel was firmly adherent to the anterior wall of the stomach at the site of the operation, but there was no patency, the opening being entirely occluded. One silk suture was still *in situ*.

The stomach was dilated and the whole of the mucous membrane was thickened and markedly injected in patches. The œsophageal end was somewhat thickened. The stomach was adherent to the surrounding viscera, liver, spleen, etc. There were no secondary deposits in the liver.

The growth was a carcinoma. Sections were taken from the pyloric end of the stomach wall, which showed carcinomatous infiltration. The muscular layers were hypertrophied and the submucous layer was thickened.

"In reviewing the case," says Mr. Hankins, "the first noteworthy point is the great relief afforded by the stomach irrigations before the operation, nausea and flatulence being removed, the vomiting ceasing. The last washing out was just before the anæsthetic was administered, thus making the opening into the organ comparatively safe and removing the danger from vomiting.

"Then as to the abdominal incision. As it happened mine, was too near the costal cartilages, as the interposition of the liver prevented an open view of the disease and necessitated an upward retraction of the liver and a drawing down of the lower lip of the incision. On the other hand, this valvular arrangement probably saved the patient's life when the abdominal wound burst open on the tenth day. I think the oblique or transverse incision gives more room if it is intended to remove the pyloric growth, but for a simple jejuno-gastrostomy a vertical incision in the middle line would be sufficient and more convenient. I regretted afterward that on opening the stomach for the insertion of the plates I did not introduce my finger and test the patency of the pyloric opening. I think this should always be done if possible as affording valuable information. The exhausted state of the patient and my desire to keep my fingers aseptic were the causes for the omission in my case. The examination and subsequent disinfection of fingers would have occupied some little time, which the patient could ill spare.

"In all the descriptions of Senn's operations I had read prior to my operation it is recommended to apply Lembert's sutures at points all round the plates, especially if they do not seem to be in close apposition. On attempting this I found it could only be done on three out of the four sides—viz., at the two ends and on the upper edge, as the mesentery of the jejunum completely shut off the lower edge, where, by the by, from the fact of its being first tied together, the extra suture was most required. In Senn's book on intestinal surgery I find he anticipates this difficulty, and recommends the insertion of the Lembert suture at the lower edge before the first threads are tied together, also that a continuous catgut suture be run along the upper edge to resist the downward dragging of the jejunum. I would draw attention to the fact of food being given by mouth as early as the second day. Had this not been done I feel sure the patient would never have survived the complications from which he afterward suffered. The severe cough with adhesive expectoration I attribute to the ether. It nearly proved fatal, but I believe never took the form of pneumonia, rather a congestion of the smaller bronchi.

"The bursting open of the wound was owing to an oversight on my part for which I can not too severely blame myself. On removing the stitches I neglected applying strapping to support the abdominal walls, and the cough which set in about this time broke down the recent adhesions. I have reverted to the fact of the flap of liver preventing the opening up of the abdominal cavity. Owing to the retraction of the muscle and the rolling inward of the edges of skin, the healing of the wound made very slow progress. The man's vitality was so low too that granulations were very tardy in appearing. This accident, serious as it was, and still more serious as it might have been in its results, did not, as it happened, affect the course of the case to any material extent. The real danger after the first few hours was from the pulmonary congestion.

"The operation had a most decided effect for good as long as the new opening remained patent, and the most important consideration in connection with this case is how the closure may be prevented.

"As far as I have been able to ascertain, only one or two cases of closure of the new opening, verified by *post-mortem* examination, have been reported, one in particular by Mr. Stansfield in December, 1889; and as an aid to the diagnosis of such an occurrence in the future, it would be well to note that in the case under consideration the symptoms of recurring obstruction did not appear until three months after the operation.

"To prevent this accident Mr. Jessett speaks well of 'button-holing' the incisions in stomach and intestine so as to coapt the mucous and serous layers before inserting the plates. The question is, Would union between these surfaces take place readily if they were so treated? For my part I should be inclined to use broader plates with a wider aperture than I used in this operation, the dimensions of which were those given by Senn. I should transfix the coats of the viscera at the extremities of their long diameter, bring those corresponding with the short diameter of the plates through the incision without transfixing, as by this means the edges of the new opening would be kept wider apart than would be possible by the more usual method.

"Then comes the question, Supposing the diagnosis of closure of the new opening is pretty clear, what can be done to relieve the patient?

"Although in the case under consideration the adhesions, owing to the breaking down of the abdominal wound, were very extensive and would have made any further operation exceedingly difficult, I suppose the proper course in a case not so complicated would be to repeat the operation a little lower down the jejunum. I think if the bowel were slack enough this would be more feasible than trying to re-establish the old opening through an incision in the gut. One word as to the fixing of the threads to the bone plates. Catgut has been recommended because silk has been known (in animals) to form the nucleus of an enterolith, and certainly when attached in the manner recommended by Senn, such would seem a likely occurrence; for after the solution of the plate two silk rings would remain, one in the stomach and the other in the jejunum, connected together by four short threads, two of them perforating the walls of the gut. In such a case the silk rings would form snares for the intestinal contents, but if the four sutures were merely stitched to the softened bone plates by means of the needle, there would be but very little of the sutures, and of only two out of the four, projecting from mucous membrane after the bone had become dissolved. This was actually demonstrated in this case. Only one of the sutures could be seen; it was held in position by the knot buried between the adherent layers of peritonæum, short ends of less than half an inch in length lying loose in the viscera. Had it not been for this suture there would have been no indication as to the exact site of the opening; it had closed up both on the ventral and jejunal side without the slightest scar."

The Vivisection Gnat and the Commercial Camel.—The *British Medical Journal*, in its issue for August 20th, says: It has before been the subject of caustic remark how readily many of those who strain at the gnat of physiological experimental investigation swallow the camel of wholesale mutilation where either commerce, the pleasures of the table, sport, or agricultural finance require or suggest mutilation, destruction, or wholesale infliction of agonizing pains upon even the most highly organized creatures; not to speak of the wholesale agonies of rabbit-trapping in the warren for the market, or of the coursing of the hare, the hunting of the deer and the fox, and the mutilation of countless pigeons in matches, and grouse, pheasant, and partridge in battues and drives, of the wholesale poisoning of rats and other vermin by strychnine, phosphorus, and arsenic, or of the universal practice of mutilating without anæsthetics—horses for draft, boars and sows, bulls and rams for the butcher, the creation of liver disease on a great commercial scale to supply the *gourmet* with *foie gras*—we notice one of the most humanitarian of papers speaking with approval of an order just given by the Departmental Commission, appointed recently to inquire into the plague of field mice in Scotland, for experiments to be made on a considerable scale by an eminent biologist, who has undertaken to bring about the destruction of these marauding herds by spreading an epidemic among the mice. In this case, however, everything seems to be condoned because the object for which the services of the researcher are engaged is a commercial one and in the agricultural interest, whereas if it were only to prevent suffering among mankind by discovering with accuracy methods of preventing or curing disease or the effects of disease, we might be sure that Miss Frances Power Cobbe, Bishop Barry, or the Bishop of Manchester would be heard bemoaning the wickedness and cruelty which could think it right to purchase whatever boons to mankind at the cost of pain to any member of the defenseless dumb creation. The inconsistency is sufficiently marked, but it would be hardly worth while emphasizing if it were not that it indicates the underlying fallacy of their whole argument. Which is the greater cruelty, to infect a herd of mice, to imprison thousands of rabbits for long hours with broken limbs in steel-jawed gins, to geld a herd of horses or of sheep, or to perform a physiological experiment in the laboratory after giving proof that the object is one important to knowledge and likely to benefit mankind? Nay, the pain and suffering inflicted in any one county in this way is probably greater in a day than that inflicted in the whole of the physiological laboratories of Great Britain in a year. Moreover, in the one case anæsthetics are never administered, in the other they are so in most cases, and if they are not so administered a special declaration and a special license is required. No declaration and no license is required when the mutilation is inflicted or the agony imposed for any commercial or agricultural purpose or even to gratify a fastidious palate or to satisfy a peculiar aversion. As Sir William Jenner aptly put it on the occasion of the famous deputation of medical men to Mr. Cross, introduced by Mr. Ernest Hart at the Home Office in 1876, any man may catch a rat in the most cruelly devised trap, or hunt it to death with dogs, or poison it with strychnine, or destroy it as he pleases for the mere reason of dislike or fear but if he wishes to inflict any kind of pain, however slight, with a view of deriving knowledge for the benefit of medical science and the relief, of suffering, he is either forbidden altogether or permitted only to do so under a special license, and even then is held up as a malefactor by certain of the fanatical anti-party.

The Mississippi Valley Medical Association will hold its eighteenth annual meeting in Cincinnati on Wednesday, Thursday, and Friday, October 12th, 13th, and 14th, under the presidency of Dr. C. A. L. Reed, of Cincinnati. Among those who are expected to read are the following: Dr. Hunter McGuire, of Richmond, Va. (the address in surgery); Dr. Hobart Amory Hare, of Philadelphia (the address in medicine); Dr. Reed, Dr. Ricketts, Dr. Hall, Dr. Dowling, Dr. Ayres, Dr. Connor, Dr. Ransohoff, Dr. Dandridge, Dr. Comegys, Dr. Whittaker, Dr. Zenner, and Dr. Zinke, of Cincinnati; Dr. Cook, Dr. Woodburn, and Dr. Thompson, of Indianapolis; Dr. Owen and Dr. Walker, of Evansville; Dr. Lydston, Dr. Moyer, and Dr. Belfield, of Chicago; Dr. Mathews, Dr. Wathen, Dr. Larrabee, and Dr. Reynolds, of Louisville; Dr. Savage, of Nashville; Dr. McGahan, of Chattanooga; Dr. Dixon, of Henderson; Dr. Hughes, Dr. Love, Dr. Loeb, Dr. Dalton, Dr. Boerck, Dr. Bond, Dr. Hulbert, and Dr. McIntyre, of St. Louis; Dr. Lamphear, of Kansas City; Dr. Smith, of Montreal; Dr. Sutton, Dr. Murdock, and Dr. Daly, of Pittsburgh; Dr. Early, Dr. Ridgeway, and Dr. Potter, of Buffalo; Dr. Baker, Dr. Cleveland, and Dr. Thorn, of Toledo; Dr. Walker, of Detroit; Dr. Baldwin, of Columbus; and Dr. Bond, of Richmond.

An Army Medical Board will be in session in New York city during October, 1892, for the examination of candidates for appointment to the Medical Corps of the United States Army, to fill existing vacancies. Persons desiring to present themselves for examination by the board will make application to the Secretary of War before October 1, 1892, for the necessary invitation, stating the date and place of birth, the place and State of permanent residence, the fact of American citizenship, the name of the medical college from whence they were graduated, and a record of service in hospital, if any, from the authorities thereof. The application should be accompanied by certificates based on personal knowledge, from at least two physicians of repute, as to professional standing, character, and moral habits. The candidate must be between twenty-one and twenty-eight years of age and a graduate from a regular medical college, as evidence of which his diploma must be submitted to the board. Further information regarding the examinations may be obtained by addressing the Surgeon-General, U. S. Army, Washington, D. C.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

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Original Communications.

LOCALIZED TRANSIENT ŒDEMA.*

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A condition of œdematous swelling of limited portions of the surface of the body, transient in duration and attended by marked vaso-motor changes, has been recognized for some years. It has been termed acute œdema, or angeioneurotic œdema. The latter term implies a knowledge of its pathology, which is not as yet established.

The essential features of the disease are as follows: A swelling of the tissues affected of an œdematous kind, with a change in their color, temperature, and consistence, usually without, but occasionally with, a disturbance in the sensations of the part and an interference with the functions of the parts, due to the stiffness and swelling. The *swelling* is usually transient, comes and goes rapidly often after exposure to cold, but may remain permanently for some days. It appears to be of the nature of œdema of the corium itself, rather than of the cutaneous connective tissue, as it is hard, does not pit on pressure, and can not be entirely removed by pressure or manipulation.

The *color* of the part affected is usually red or reddish blue, but is sometimes whitish-yellow or pale.

The *temperature* is usually lower than in the unaffected parts.

The *sensations* felt by the patient are those of stiffness, burning, numbness, or pain, and the discomfort is increased by the application of cold. Objectively, anæsthesia is rare.

Any part of the body may be affected by the œdema, but hands and feet and face are the parts most often affected.

The *duration* of the attack varies from a few hours to a few days. In the majority of cases there is a complete cessation of symptoms between the attacks. In a few there is only a remission.

The disease has been well described by Simon in the *Johns Hopkins Hospital Reports*, by Osler, Quincke, Strubing, and others. As to its nature or pathology nothing is known. Osler has shown that it may be hereditary.

Various remedies have been tried in its treatment, but none have seemed of much avail. In one of my cases massage appeared to be of benefit. In none of them did nitroglycerin, or drugs of an allied action, or ergot have any effect.

The following cases are recorded as a contribution to the clinical features of the disease:

Case I. *Local Transient Œdema, limited to the Right Face.*—A woman, aged twenty-eight years, was seen on October 6, 1891, for Dr. E. L. Partridge. She was a married lady, of good family history, and had always been in good health. She could assign no cause for her peculiar disease, from which she had suffered at intervals for two years. It had not come on after any emotional excitement or physical strain. At first it had given her very little discomfort, but during the past year she has suffered a good deal. When she is in any way exposed to cold upon her face she notices that the right half of the face begins to feel stiff and to burn. When she looks at herself, she finds the entire right side of the face swollen and whitish in color, and to the touch the swollen part is perceptibly hard. This condition may pass off in a few hours, but often lasts for three or four days, gradually subsiding. She has noticed that warm applications will relieve it in some degree. It often comes on after she has been driving in the summer, but is more troublesome in the winter. It sometimes comes spontaneously without exposure or known cause. It has no relation to or connection with her general health, indigestion, or menstruation. Fear of it or expectation will not produce it, though she is in constant dread of it, as it often interferes with her going into society or keeping social engagements.

The right half of the face was swollen at the time of her visit to the office. The surface of the forehead was elevated. The tissues about the eye, the eyelids, and soft parts beneath the eye were swollen and stiff, and so tense that the eye could not be opened as widely as the other. The cheek was perceptibly rounded and fuller than the other, and the chin shared in the swelling. The neck was not at all affected, its tissues being loose. The swollen surface was colder to the touch than the opposite side, and had a whitish-yellow tint without the natural color, which was good on the left side. An application of heat for a few minutes had no perceptible effect. The condition seen had been present for two days. The face had an appearance of œdema but did not pit on pressure and was much harder than œdematous tissue. It resembled almost exactly the condition seen in myxœdema, but the swelling did not produce that thick fold running up on the nose from the cheek seen so frequently in myxœdematous patients.

Under massage the condition subsided within a few hours, and this treatment was kept up daily for two months. Since that time there has been but one return of the swelling, so that in this case massage has certainly afforded great relief for at least six months.

Case II. *Local Transient Œdema.*—A woman, aged thirty-seven years, was seen on March 27, 1887, with Dr. Walter James. She had been subject to emotional strain for a few months before her present illness, having lost three children at once and having grieved very much. In October, 1886, she noticed that her hands swelled whenever she put them into cold water. When winter came on this swelling on exposure to cold was noticed in all other parts of her body—*e. g.*, the face and legs when out of doors, and the buttocks when she went to stool in a cold closet. It has been most severe in her hands. During the swelling the skin feels as if it would burst, the hands are hot, and she can not use them. No other symptoms are complained of.

Examination.—She is a well-nourished woman with no physical signs of heart, lung, kidney, or uterine disease. Her face is swollen on the lower part of both cheeks, feels hard to the touch, but does not pit on pressure, and has a yellowish, waxy appearance. This she says is due to the cold wind and is temporary. It subsided somewhat during her stay in my warm office. The left hand was subjected to experiment. It was first tested and found to be the same as the right in point of all sensations. It measured 195 mm. around the knuckles, and 54 mm. around the middle joint of the middle finger. The dynamometer grasp was 75°, right 85°. It was then held in cold water for a minute. After half a minute in water it looked reddish pink; when taken out of the water it was of a blotchy blue; in a minute it had become uniformly bluish red; in a minute and a half, paler; in three minutes, yellow; and at the end of five minutes and a half it was white and waxy in appearance and the skin had become quite glossy. The veins on the back of the hand were distended and she complained of throbbing in all the fingers, and this was perceptible to the touch. The entire hand had become swollen so that at the end of ten minutes it measured 204 mm. around the knuckles and 62 mm. around the middle finger. At the same time the fingers became so stiff that they were moved with difficulty, and the dynamometer grasp was reduced to 35°, the effort of squeezing producing pain, distention of the veins, and a feeling as if the skin would burst. The temperature rose rapidly during the swelling of the hand. Two surface thermometers were laid on the hands, each marking 70° F. After one minute the thermometer on the right hand was 78°, on the left hand 87·5°; after three minutes, 81·75° and 91·75°; after nine minutes, 85·5° and 93°, at which point they remained for three minutes and were then removed. These thermometers had previously been tested and were duplicates in sensitiveness. The sensibility to touch and pain was not altered during the swelling. A rubber band applied to the little finger forced the blood out and reduced the œdema, but, on taking it off, dark-blue lines were left and the swelling returned at once. The swelling appeared to be of an œdematous nature, but the parts were very hard and did not pit on pressure. The waxy appearance and glossy skin began to fade in fifteen minutes after the hand had been put into water and the hand became whiter and the pain and throbbing less. At the end of twenty-five minutes motion was freer, and the measurements were 195 mm. and 61 mm. During the entire time the pulse was 88 at the wrist and its tension did not vary perceptibly to the touch. The fingers were still swollen when she left at the end of forty minutes. She states that the nails grow more rapidly than formerly. There is no change in the sweat. Various kinds of treatment had been ineffectual, and the patient still suffers from these symptoms in cold weather.

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* Read before the New York Neurological Society, May, 1892.

Case III. *Local Transient Œdema limited to the Left Hand.*—Female, aged fifty-four years, seen with Dr. Mathewson, March 31, 1892. She is a healthy woman and has a good family history. Has never suffered from any severe diseases. The present condition began at Christmas, 1891, without known cause, certainly not after special exposure to cold. It is limited entirely to the fingers and thumb of the left hand, the hand itself escaping. The fingers are swollen, dark blue in color, hard to the touch, stiff in movement, and after exposure to cold become very painful. The size of the phalanges of the index compared with that of the right hand was as follows: First phalanx, $\frac{6}{55}$ mm.; second phalanx, $\frac{55}{49}$ mm.; third phalanx, $\frac{50}{40}$ mm. There was no anæsthesia to touch, temperature, or pain, but cold was felt more acutely in the affected fingers, and after the hand had been exposed to cold, cotton was not always felt. The œdema could be slightly reduced by manipulation, but not permanently, and the color returned at once after pressure. The stiffness and pain were much increased by immersion in cold water, and then relieved by heat. She can not carry the hand hanging down without much pain. Power was impaired by the stiffness. There was no atrophy of the hand muscles. The electric resistance was carefully measured, but was equal on both sides. There was no atheroma of the radial or other arteries, and tension was not high. Treatment had been of no avail. Massage was recommended. The condition here was stationary, with remissions, in which respect it differed from the other cases, in which it had been intermittent.

SOME WAYS OF PREVENTING THE SPREAD OF SYPHILIS.*

By CHARLES W. ALLEN, M.D.,
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When, about two months ago, I was invited by your worthy presiding officer to read a paper on some subject pertaining to the public health, I promptly and gladly accepted the opportunity to bring up for discussion in this Section a subject which has been in my mind for a long time, and one whose importance, it seems to me, has not been surpassed by any of the questions usually discussed here.

Prophylaxis forms a sadly neglected chapter in the subject of syphilis, mainly for the reason that there has seemed to be so little to be said about it; but it is only seemingly so, for in reality there is much that might be said concerning means that could be employed to hedge about and hinder a disease so universally distributed, so generally dreaded, and at the same time so well understood in regard to the conditions under which it is acquired and spread.

Still, it is allowed to go on in its relentless course, gathering new forces as it goes, bearing down before it the innocent as well as the guilty, high and low alike, the virtuous not less than the vicious.

Should all our energies be strained to discover whether ten injections of an insoluble salt are superior to thirty inunctions of blue ointment, and no thought be given to the possibility that the poor devil might have been spared it all?

Have we, as supposed guardians of public health, done the square thing by the people in the matter of syphilis? Have we made the same effort to check it that has been made in respect to other contagious or infectious diseases? I think not. Syphilis has, unfortunately, been looked upon too much as a venereal disease, and it is largely the fault of the members of our own profession that so much popular ignorance exists regarding it. Too much can not be said against such narrow-minded utterances as the following, still occasionally heard, though fortunately much less often than in former times: Mr. Solly, a well known surgeon, in speaking on this question at the Royal Medico-chirurgical Society some years ago said: "Far from considering syphilis an evil, I regard it, on the contrary, as a blessing, and believe that it was inflicted by the Almighty to act as a restraint upon the indulgence of evil passions. Could the disease be exterminated, as I hope it can not, fornication would ride rampant through the land." Such a person, in my opinion, should be made to "ride rampant through the land" on a rail. Such sentiments, I believe, are largely responsible for the great prevalence of syphilis to-day. They have prevented medical schools from giving students proper instruction in regard to this disease; they have kept closed to syphilitics the doors of hospitals not only in England, but in this country as well; they have held back the hand of legislation, and they have accomplished no good end. Men ever have had and they ever will have illicit intercourse, and neither the dread of syphilis nor any other fear will keep them from it so long as the world endures. It is not worthy of us, as men of science, to be satisfied with letting matters take their course, and simply expressing regret when innocent persons suffer as the result of other's faults. We should do as much to prevent the spread of syphilis as we would in the case of leprosy, cholera, diphtheria, or variola. The physician has almost stamped out small-pox, while the great pox is left unmolested to vitiate the blood of the nation.

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* Read before the Section in Public Health, etc., of the New York Academy of Medicine, May 18, 1892.

But you ask, How can we do anything? we have no protecting virus as we have in vaccinia? Very true. Till now we have none such, and its practical application might be seriously questioned should one be found. Still there are many ways at our command by which syphilis might be very greatly decreased. And first of all we must do away with the sentimentality which has so surrounded the disease that its name was not to be mentioned much above a whisper even in some medical circles, and not at all or even thought of in public. Yet leprosy is discussed in drawing-rooms, and forms a most stable literary topic for magazine articles. In my opinion, the one is scarcely more a venereal disease than the other.

I would suggest, then, as a first means of accomplishing our object, *to teach the public something about the disease*, its nature, its dangers, and the ways to avoid them. And to do this I would treat the subject simply in its nonvenereal aspects. If necessary, we might go so far even as to change the name. If the term "syphilis" can not be freely mentioned, let us adopt a designation which may possibly better suit the condition, and at the same time better suit the public ear.

Syphilis is not such a good word that great objection ought to be raised against dropping it, except that it could not be effected in a day. No one knows positively its etymology, and for the public the good old Anglo-Saxon *pox* would probably be better, as the public ear is so accustomed to its combinations in small-pox and chicken-pox.

The Latin *lues* is not a bad term, and one now so almost wholly given up to *lues venerea* that the qualifying "venerea" may with propriety be left off, especially for the numerous non-venereal cases.

Popular instruction in all lines of preventive medicine can not be amiss. There is a sad lack of knowledge, even among the victims of the disease, whom one would expect to find well versed in the subject from the private instruction given them by their physicians, but such is frequently not the case.

The daily, and especially the Sunday, papers do not hesitate to devote columns to the discussion of medical topics and instruct their readers in all branches of medical science excepting syphilis, and possibly one or two other diseases, but it is simply because they have been taught by the physician to omit this subject. Once let the physician show the proper way to treat the question, and the public press will quickly follow. Then there may come a time when, instead of the quack's advertisement containing the only reference to syphilis ever to be found in a public journal, some wholesome instruction may occasionally be given to the infected, telling them how to avoid giving the disease to others, and hints to the healthy as to how to keep free from it.

And this brings me to speak of prophylactic measure number two—*more adequate instruction to medical students.* The amount of time and attention given this important subject in many medical schools is simply farcical. Men are sent out into the world and expected to diagnosticate syphilis when the training the college authorities have vouchsafed them in this branch is entirely out of proportion to its importance.

I am continually seeing victims of the disease who are no less the victims of this lack of proper clinical instruction and requirements on the part of the medical school. I say it, gentlemen, in a spirit of shame rather than one of captiousness, that practitioners too often, from lack of knowledge or want of carefulness, permit patients to marry and to cohabit while still sources of danger, and to go about freely with contagious lesions in the mouth or throat without giving them warning of the facility with which they can transmit the disease to others. Let, then, the physician, as well as the public, receive better instruction in everything pertaining to syphilis, and especially in ways to avoid it or, when contracted, ways to avoid its dissemination.

Thirdly, I would advocate the *enforcement of any laws now on the statutes bearing upon the question*, and the enactment of such further laws as may meet the requirements of preventing syphilitics with contagious lesions from propagating the disease. There are already existing municipal and State laws which would seem to cover many features of the case. Thus Section 8 of the Sanitary Code says: "No person shall carelessly or negligently do or devise or contribute to the doing of any act or thing dangerous to the life or detrimental to the health of any human being; nor shall any person knowingly do or devise or contribute to the doing of any such act or thing," etc.

Even under this section any person with such a contagious disease as syphilis who knowingly exposes another to infection would be guilty.

Again, in the State Penal Code there is a section (No. 434) entitled "Exposing Persons affected with Contagious Disease in a Public Place," which reads as follows: "A person who willfully exposes himself or another, affected with any contagious or infectious disease, in any public place or thoroughfare, except upon necessary removal in a manner not dangerous to the public health, is guilty of a misdemeanor."

This surely should apply to a woman who, having syphilis, exposes herself in a public place or upon the street as an article of barter; but, as it is never enforced, it can not meet the requirements.

The difficulty of securing legislation discriminating against either sex could be obviated by enacting laws to govern prostitutes of either sex, and to apply to public men as well as to public women. (I do not mean public men in the sense in which we usually employ it.) Unfortunately, we have recently had spring up here in New York a vice known in ancient times and one which lent not a little to the decline and fall of once powerful cities. We have borrowed it from older countries, but, like much else that is transplanted to this soil, the custom is adopted without the restraining customs of the countries from which we borrow. All goes here with a rush. Yesterday a vice known of only as it existed elsewhere is found here, and to-day it flourishes like some stinking weed, whose roots apparently sink deep into the soil, but, like the roots of the weed that springs up on a heap of dirt, they do not penetrate to the true soil and can be readily unearthed by one who has the courage to grasp the slimy stalk and pull them out.

The male prostitute just now requires considerable attention from the authorities; but all we shall ask of them at the present is that they prevent him from disseminating syphilis in his vile trade. If to accomplish this total annihilation is found necessary, we have no objections to offer. It should be made a crime, severely to be punished, for any keeper of a brothel or house of assignation for either sex to maintain upon his or her premises a person known to have a contagious venereal disease.

It should be a crime, attended with an equal or greater punishment, for a person having a disease known to be contagious and dangerous to another through coitus to deliberately cohabit and transmit such disease.

Have we anything to hope from government restriction of prostitution so far as its decreasing syphilis is concerned? Just now there is considerable public interest in the question of vice in this city and what to do with it. Whether it will result in any good to expose it, as is being done, to the innocent of the land, is very questionable. A few convictions in court may decrease the number of houses, but it will only change the quality of the prostitutes, not the number. It has been repeatedly shown that less disease exists among the women of houses than among the outside pseudo-respectable working-class prostitutes, and waiter-girls in so-called dives, beer saloons, etc. It is the hidden prostitution which is the most dangerous. Drive women from the house to the street, and the chances are in favor of syphilis being increased as a result.

There can be no question that strict regulation of prostitution is one of the most potent means of keeping down syphilis; still this is not enough; attention should be paid to the frequenters of brothels as well as to the inmates. This is only feasible to a limited extent in a way which I shall presently suggest. Since the last discussion at the Academy of Medicine on the prophylaxis of syphilis Dr. Commenge has furnished statistics showing that among 305,799 registered prostitutes holding certificates there were 3·12 in 1,000 cases of syphilitic affections. Among 503,712 registered prostitutes living in licensed houses, 2·70 in 1,000 cases. Among 76,740 registered prostitutes *en dépôt* (prison) there were 23·96 in 1,000 cases, and among 27,041 unregistered prostitutes there were 166 in 1,000 cases, all of which seems to show the necessity of vigilant supervision and strict regulation of prostitution.

Dr. Blaschko has recently published in the *Deutsche Mediz.-Zeitung*, No. 3, 1892, a study of venereal diseases in Berlin during the past twenty years, and shows that syphilis has been on the decrease. He first points out that the population of Berlin has increased in the following proportions: Number of inhabitants in 1860, 528,900; in 1889, 1,520,000. The number of prostitutes under supervision during this same period was for 1860, 989; for 1889, 3,713.

Now, from the city's statistics it is shown that along with other venereal diseases syphilis has been gradually decreasing, and while in the period from 1873 to 1878 there were 11·3 cases in 1,000, from 1878 to 1883 there were only 9·8 cases in 1,000, and from 1883 to 1888 7·8 cases in 1,000.

The statistics of the Charity Hospital of Berlin also show a progressive diminution in venereal diseases in general and of syphilis in particular.

Again, the number of still-births recorded, while 46·2 in 1,000 from 1860 to 1869, had fallen to 37·7 in 1,000 in the period 1880 to 1889, and it is well known that syphilis is by far the most common cause of death to the fœtus.

Now, while the writer estimates from his study of the question that from ten to twelve per cent. of the inhabitants of Berlin are syphilitic, he still maintains that the proportion has been larger in the past thirty years. Naturally we should expect that the profession made by the authorities that their strict oversight and regulation of prostitution had been the cause of this very favorable showing would be accepted. The author of the paper takes a different stand, and attempts to show that other factors have a great deal to do with the result. He looks upon the prostitute in this matter not as the propagator but as the receiver of the disease, and brings figures to prove that formerly the danger of these women being contaminated by men was twice as great as it now is. In 1889 fifty per cent. of the prostitutes of Berlin were admitted to hospital for treatment, and he argues that, as they have connection about five hundred times a year, we can count fifty thousand acts of coitus to one hundred prostitutes; and if these only occasion fifty contaminations, the proportion would be only one infection in each one thousand cohabitations—under police supervision.

If the women are less often infected now than formerly, it is argued that there must be less venereal disease among the men, and the fact that there is he attributes to the greater facilities now offered for proper treatment, and to a greater amount of knowledge on the part of the masses relating to the dangers of syphilis and the necessities of early and thorough treatment.

In France the *visite sanitaire* has received pretty thorough trial, and the Paris Academy has recently voted, almost with unanimity, after a discussion of the whole question, that the present regulations should be maintained. There appears to have been a marked decrease in venereal diseases in the French army during the past twenty years, and this is attributed to the fact that the houses frequented by the soldiers are inspected. Of course, if Dr. Parkhurst's society is going to do away wholly with vice, there will be no necessity for such regulation here; but should this prove an impossibility, then the sanitary powers should see to it that what licentiousness remains is as free as possible from disease and danger to the public. The regulation of prostitution and sanitary inspection I would then put down as one of the most important means of diminishing syphilis.

In Vienna each prostitute receives a book containing a description and photograph of herself, and a copy of the laws relating to prostitution. No one under sixteen can be registered, nor those afflicted with organic or constitutional disease. Sanitary examinations are made twice a week. All diseased women are put into the hospital, where primary syphilitic cases are quarantined for three months and kept under treatment for two years,

This plan appears to give satisfaction. I would further advocate, in the absence of such regulation, the freer admission of venereal patients into hospitals. Extensive as are the provisions made for this class in New York, there is room for much improvement; more wards are needed. You will probably be surprised to hear after this statement that the female venereal wards of the City Hospital are scarcely ever full, often not over half the beds being occupied, while, as is well known, the city is overrun with diseased women. The reason for this is, I believe, a proper lack of encouragement to these women to accept hospital care. There has been too much tendency at times to say to these applicants for admission: "Go get rid of your disease where you got it." Women have more than once been turned back into the street and forced to return to a life in which they must of necessity spread disease. The city should gladly receive all applicants with contagious venereal diseases, and care for them in such a way, until the danger is over, that others similarly affected will be attracted to the hospital rather than repelled. I have seen patients who had contracted syphilis in some innocent manner refuse to stay in the wards with those whose infection was due to vice; still, I do not know that we can now discriminate and furnish separate wards for the non-venereal syphilitics, desirable as such a distinction might be. Much, however, may be done to make the city's venereal service more attractive and more efficient.

And now, gentlemen, in conclusion, I will speak of a way which I think will do much to check the spread of syphilis in a direction in which, it seems to me, legislation can act. For a number of years it has been a cause of much regret to me that there was no way of restraining hospital patients from quitting the institution while still in a condition of great danger to others, but in such a perverse frame of mind that no amount of moral suasion could change their determination. Only two weeks ago a house physician at the City Hospital experienced the greatest difficulty in detaining a woman with a still ulcerating chancre of the lip; not so much on account of the public good, but so I could show her at the Saturday clinic. Last Saturday I presented a patient with an eroded chancre of the penis who had insisted on going out a week before, when the sore appeared healed, and had returned with the epidermis rubbed off and the sore much irritated, as was strongly suspected, from coitus. I have repeatedly seen men leave the hospital with one disease still in its infectious stage and soon return with another venereal disease superadded, giving positive proof that they had endangered others.

Now, it seems to me that the action taken by the people of Massachusetts is far in advance of anything we have done here, and is a move in a direction which should find imitators. My friend, Dr. Bowen, of Boston, has kindly sent me the text of an act approved by the Legislature, June 11, 1891, which was originally suggested by Dr. Fisher, in a very able article on the Necessity for Social and Statute Recognition of Syphilis, read before the Massachusetts Medical Society, May 21, 1890:

[CHAP. 420.]

AN ACT TO PROVIDE FOR THE DETENTION AND TREATMENT OF INMATES OF PENAL AND CHARITABLE INSTITUTIONS WHO ARE AFFLICTED WITH CERTAIN MALIGNANT DISEASES.

Be it enacted, etc., as follows:

SECTION 1. Any person who is confined in, or an inmate of, any State penal or charitable institution, a common jail, house of correction, or municipal or town almshouse, who shall have the disease known as syphilis, shall at once be placed under proper medical treatment for the cure of such disease, and when in the opinion of the attending physician it is necessary for the proper treatment thereof, or that such disease is contagious, so as to be dangerous to the health and safety of other prisoners or inmates in such institution, the persons under treatment shall be isolated from such other prisoners or inmates until the contagious stage of such disease has passed, or until the time when in the opinion of the attending physician such isolation is unnecessary.

SECTION 2. When at the expiration of the sentence of any person who is confined in, or is an inmate of, any of the institutions named in section one of this act, such person shall then have the disease known as syphilis in its contagious or infectious symptoms, or in the opinion of the attending physician of such institution, or of such physician as the authorities thereof may consult, would cause the discharge of such person to be dangerous to public health and safety, such person shall be placed under proper medical treatment and kept and suitably cared for as provided in section one of this act, in the institution where he has been confined, until such time as in the opinion of the attending physician such contagious and infectious symptoms shall have disappeared, and the discharge of the patient shall not endanger the public health. The expense of his support not exceeding three dollars and fifty cents a week shall be paid by the city or town where he has a legal settlement, after notice to the overseers of the poor of such city or town, or, if he is a State pauper, after notice to the State board of lunacy and charity, of the expiration of his sentence, and of his condition.

Now, if our New York Legislature would make similar enactment, its application to the institutions at Blackwell's Island would soon prove, it seems to me, of decided advantage. Scarcely a week passes that patients do not demand their liberty when it seems a criminal thing to let them go at large.

"To guard is better than to heal—
The shield is nobler than the spear."

696 MADISON AVENUE, NEW YORK.

Thiocamf.—"This new disinfectant, to which we have previously referred," says the *British and Colonial Druggist*, "presents a ready way of using sulphur dioxide as a disinfectant—the chief obstacle to its use previously having been that, in spite of its known efficiency, it was not convenient in use. Thiocamf, however, a combination of camphor and sulphurous acid, presents the germ-destroying agent in a very concentrated and convenient form."

SUMMER COMPLAINT:

A CLINICAL CONTRIBUTION TO THE ÆTIOLOGY, PATHOLOGY, AND TREATMENT OF THE DISEASE.

By H. ILLOWAY, M. D.,
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(*Concluded from page 291.*)

As already stated, the cases of summer complaint that came under my observation from the summer of 1888 to the present time were but few in number—ten; of these, there were six in which a persistence of a certain degree of indigestion led to the administration of hydrochloric acid in one or the other described form. The result of such administration in these few cases was very satisfactory; the digestion improved rapidly, and in consequence thereof the appetite became better, and the stools normal in character. Furthermore, in children fed with the bottle, the milk prepared according to Rudisch's formula solved in a satisfactory manner the question of what to feed for the time.

The accident that occurred in Case I of the second series can not be regarded as testimony strongly contradicting the assertions here made; for, as already stated in the history, there were several factors that may have tended to produce it; but the most important of all, perhaps, was my lack of precise notions as to the length of time for which the acidulated milk should be administered.

Summary of Results.

	Total number of cases.	Recoveries.	Deaths.
First series, 1887	25	25	..
Second series	10	9	1
Total	35	34	1

Though the number of cases is comparatively small, it can nevertheless be safely maintained that the results obtained by me, as illustrated by the table, are far superior to what have ever been obtained with any of the other methods of treating summer complaint. And even the case which died strongly illustrates the value of the therapeutic measures here indicated, as can be seen from the following history:

Baby F., aged five months, bottle-fed with condensed milk; had received the breast for about four weeks; puny. Sister of baby F., referred to above. When the mother discovered about the second month that she was again pregnant, she was disconsolate. She had already had fourteen children and several miscarriages, and the hard work and suffering that she had gone through with them had told on her frame, producing a scoliosis. She therefore resorted to various drugs—ergot, quinine, cotton root, pennyroyal, and to patent nostrums—to rid herself of the impediment, without avail, however. When about five months gone she had a recurrence of an old middle-ear catarrh; she became greatly debilitated and had attacks of syncope; she had to be kept in bed for a week at a time, and stimulants freely administered became requisite. To cap the climax, financial difficulties overtook the family shortly after her confinement, and though no direct suffering ensued, it entailed great mental distress upon her and put upon her a great amount of work that was generally attended to by the husband. Family living in a small, narrow house adjoining a livery stable, in a very excellent street, however.

May 29, 1890.—The weather is very hot. Called to see the baby. The mother said that the baby had had a greater number of stools than usual since the 10th, but that she had not given the matter much attention. To-day the infant had ten stools. I asked to see the diapers, but there was none to show just then. The mother described the stools as greenish. I ordered a mixture of bismuth subcarbon. with some aromatics.

June 5th.—The bismuth did not do any good. A couple of diapers were shown me; the stools were of a greenish color. There is some elevation of temperature; the child is peevish, restless, and rather haggard in appearance. Vomits occasionally. I called the mother's attention to the necessity of applying the wet pack, as she had done in the other two children, and of frequent sponging after the temperature had been reduced. I also directed that the child be fed with milk prepared with hydrochloric acid, with which she was already familiar.

6th.—Child is better.

7th.—Continues to improve; stools not more than eight in the twenty-four hours and rather small; still greenish in color, with the addition of some mucus. To-day the stool was but a few hard lumps of casein. As, in my opinion, this clearly pointed to either an inefficient preparation of the milk or to the administration of plain milk, I called the mother's attention thereto, and urged upon her a little more care upon this point. The child had slept much better the night previous, and presented a much better appearance.

15th.—Stools still of the same frequency—eight in twenty-four hours. Directed bismuth subnitrate, gr. ij, every three hours.

20th.—Stools still as frequent. Child is bright, has a fair appearance; in no way the aspect peculiar to children with summer complaint. It appeared to me, however, that the rules laid down for the care of the child were not very strictly observed, neither in the matter of the wet pack and spongings nor in the preparation of the food; but more especially in the latter. I therefore advised the substitution of Reed & Carnrick's peptogenic milk powder, and impressed upon them the necessity of sponging the child; furthermore, I directed that whenever the head got warm to put upon it a towel wrung out of cold water, and I instructed the sister, a girl of fourteen, and the little nurse girl, upon whom the care of the child principally devolved, in this last point.

23d.—The milk powder preparation disagreed with the child, and the milk with hydrochloric acid was resumed. The child strained somewhat at stool, and for this I directed a small rectal injection of a strong decoction of peppermint with the addition of a few drops of paregoric—gtt. vj. This relieved the trouble at once.

July 31st.—Since last report the child did well. Once about the middle of the month during the hottest part the child had a slight recurrence of the trouble, but the same measures, previously employed, soon relieved it. This evening was called to see the child. The weather is extremely hot and has been so for the last three days. The mother states that the child had some diarrhœa, but the injection of peppermint decoction, as above described, soon relieved this. However, the child is restless, whines, and seems rather feeble. Some tendency to vomit. Body cool, but the head, especially about vertex and occiput, is hot. I directed the child to be immediately taken out of the house, which was frightfully hot. The cold applications to be applied to the head. As a stimulant and to relieve the evident nausea, I prescribed a few drops of spirit. ammon. aromat. to be given every three to four hours. The child was taken out in its wagon, a cold compress applied to the head, and in a very few minutes thereafter it was enjoying a sound sleep.

August 2d.—The hot weather continues; atmosphere sultry. Called to see the baby. Bowels loose; stools have a moldy odor. The mother gave it last evening an injection of peppermint and put it in the wet pack. As long as it is kept in the wet pack the bowels are checked, the child ceases to moan, and seems to feel much better. It did not take the bottle so well through the day, but takes it much better this evening. Four stools to-day; while I was in the house the child had a stool; it was of the consistence of pap and light yellow in color. It takes ten drops of whisky with a little cold water every three to four hours.

10th.—Child doing well; looks bright; has a fair appearance; thin, but not a wrinkle in its face. Sleeps fairly well, though occasionally it may wake up two to three times in the night, cry a little, and go to sleep again.

16th.—The child is very bad; it has lost its good color; face is wrinkled; body much emaciated; is very feeble; extremities cool; lies in a sort of stupor.

I ascribed this sudden change for the worse to a sudden and remarkable fall in temperature that occurred at this time—a fall so great that the houses actually felt cold and chilly. Coming on so suddenly, it had a very depressing effect upon my little patient.

20th.—Child died this morning.

That, despite the great difficulties the child labored under—a constitution undoubtedly already prenatally enfeebled, deprived of mother's milk, a mother rendered almost indifferent by a multitude of troubles and worries and sickness (she suffered from menorrhagia and pains in the back during the whole period embraced in the history of the child's illness), almost wholly dependent for the necessary attentions upon the two little girls, children themselves—it should have withstood so long and so well the ravages of the torrid summer of 1890, and that with but trivial medication, as can be seen from the history, I regard as a triumphant demonstration of the great value of the therapeutic measures here advocated, and *ergo* of the position here assumed as to the true nature of summer complaint. I said, withstood so long and so well. The history certainly proves this; and I am furthermore of the positive conviction that had it not been for the very great depressing effect upon a system already impaired in vitality by the long struggle, of the sudden cold spell, the child would have survived.

It can not be denied that the proposition here laid down as to the ætiology of summer complaint is opposed by eminent pædiatric authority in this country. But upon what grounds?

J. Lewis Smith, in his treatise *The Diseases of Infancy and Childhood*, edit. 1890, in the chapter Intestinal Catarrh of Infancy (Entero-colitis), page 788, says: "The fact is therefore undisputed and is universally admitted that the summer season, stated in a general way, is the cause of this annual recurring diarrhœa. That atmospheric heat does not in itself cause the diarrhœa is evident from the fact that in the rural districts there is the same intensity of heat as in the cities, and yet the summer complaint does not occur."

Louis Starr, in his very excellent book *The Diseases of the Digestive Organs of Children*, makes a similar statement, edit. 1886, chapter Entero-colitis, page 178. He says: "There must be another factor at work here besides the elevated temperature, since in the open country immediately surrounding affected cities, where the thermometer ranges nearly as high, the disease is of exceptional occurrence."

Shattuck, the translator of Strümpell, in the chapter on cholera infantum, in a paragraph in brackets, repeats this argument.

To any one who has lived both in the city and the country the fallaciousness of the argument will be at once apparent. What are the facts?

1. It is true that the intensity of heat is the same in the country as in the city, but *only in the open plain and only part of the day.*

2. The dwellings in the country are much cooler, even throughout the day, than those of the city, and certainly much more so than those occupied by the urban, middle, and poorer classes.

3. There is a vast difference between the *night* atmosphere of the country and that of the city. The night atmosphere of the country is cool even to chilliness; that of the city is hot.

Though for part of the day there may be the same intensity of heat in the country as in the city, nevertheless the houses, not alone in the farming districts but also in the small villages, are cool. They are generally built apart, and whatever of breeze is blowing finds but little obstruction to penetrating them, while the shaded windows keep out the hot rays of the sun. Then the shade trees which usually surround these habitations still further tend to keep them cool and comfortable.

What the houses in the large cities are—especially in the crowded districts with their narrow streets, the cramped and crowded habitations swarming with living beings, and their cooking and washing, and the multitude of lights at night—is so well known that it need not be expatiated upon here.

But the greatest difference is in the atmosphere of the night. In the country the air is cool and pleasant, and refreshing sleep waits upon tired Nature. But how is it in the great city? While the heat was great throughout the day, it is stifling at night. With the setting of the sun and the fall of darkness the immense mass of brick and stone of house and pavements gives forth the heat absorbed throughout the day, and an atmosphere is created very much like that of a furnace. Here poor tired humanity seeks in vain for a cool spot to woo sleep, and house-tops and porticoes and cellar doors and hallways are turned into sleeping apartments. But the poor little infant is kept in the room which is too hot for every one else, in its cradle with feather pillows, perhaps a feather bed to lie on. Furthermore, a light is usually kept burning all night and adds its share to render the atmosphere still more intolerable.

And it is really not so much the heat of the day as it is the great heat of the night of the large cities, which deprives the little children of their much-needed rest, that is the factor in the production of summer complaint. The proof of this lies in the fact that the children are attacked after the first hot nights; that the children are much more restless and seem to suffer more at night than in the daytime; in the repeatedly verified observation that though the days be hot, as long as the nights remain cool summer complaint does not occur; in the generally admitted fact that with the beginning of September summer complaint ceases

—and certainly we still have hot days in September; but the *nights are cool.*

It is this continuous heat, day and night, of the city that causes summer complaint. It is the coolness of the country at night, the coolness of the early morning hours, the coolness of the dwellings, that gives it exemption from this really dread disease.

It is for these same reasons that the children taken to the country do so well. These are facts patent to all and can not be gainsaid.

Foul odors, decaying vegetation, domestic filth, and the like have been set down by these authors as the direct causes of *summer complaint.* Any such ætiology, however, can be at once excluded for the following reasons:

(*a*) Summer complaint occurs in dwellings whose surroundings are clean, that are themselves kept perfectly clean, wherein the children are kept clean, wherein clothing and bedding are kept perfectly clean.

(*b*) It occurs among the rich in their fine mansions in the broad streets as well as among the poor.

(*c*) Localities with noisome odors are, comparatively, not in any way more afflicted than localities free from them.

It is true, as has been said and as I have stated, that the disease is more prevalent in the densely populated districts of the large cities, which are usually characterized by high tenement-houses and narrow streets; but it is not because of any such fancied ætiological factors as were just mentioned above, for in many instances—aye, in the majority of instances—they are absolutely wanting. But it is because in these parts the heat is positively greater, both day and night, than in the less crowded districts, or, better, in the newer districts, with their wide streets. Each house in the populous district is much hotter for the further reason that so many families dwell therein, usually large ones, and each one cooks, bakes, and washes; at night each one has one or more lights burning. Furthermore, in these, usually the oldest parts of the cities, the streets are short and crooked, and the free access of air to them is cut off by other piles of masonry that block the street at either end.

A careful scrutiny of the histories here given clearly shows that in but two out of the ten cases reported was there any ground for the assumption of such an ætiology, and even here it was but slight.

That the disease does not occur among the poor only these gentlemen themselves indirectly admit. In the chapters on the therapeutics of the disease they recommend removal to the mountains or to the sea-side as the best of remedies. Now, such advice can certainly only be given to the richer class who possess sufficient means, and they must be quite considerable for compliance therewith. And certainly such people do not, as a rule, live among stenches, decaying vegetation, and filth.

But we have more direct proof. It is a well-known fact that if these factors are anywhere present it is in the quarter inhabited by the negro population of a city. The squalid, rickety dwellings, densely populated—almost a family to a room—reek with a thousand odors from decaying animal and vegetable matter. The streets in which these dwellings are situated—usually alleys or abandoned streets—teem with filth, being the receptacle for the garbage, etc., from the houses on it. The street-cleaning department visits these places only in times when a pestilence threatens; otherwise they remain undisturbed, year in and year out. Now, if these factors are so potent, the mortality among the colored children should be something frightful. How is it in reality? The following table will show:

Deaths from Cholera Infantum.[*]

	White.	Colored.
1889, June	18	..
" July	42	1
" August	27	..
1890, June	56	1
" July	45	2
" August	22	..

This table loudly proclaims the contrary of what, upon this theory, we should have expected. Not alone that, but it also clearly indicates that summer complaint is of exceedingly rare occurrence among colored children.

If foul odors, decaying vegetation, and filth are the chief factors in the production of summer complaint, then this table is certainly a riddle the solution of which is as yet to be found. It can not be claimed that the colored race has an immunity against such agents, for there are no grounds upon which to base such an assumption; moreover, the much greater mortality of the race, as shown by Southern statistics, clearly indicates the contrary.

If heat, however, is the chief ætiological factor in its production, as is maintained here, the exemption of colored children from this disease is perfectly clear. I say exemption, because I firmly believe that, if the cases were thoroughly sifted and summer complaint separated from the cases in which the vomiting and diarrhœa were due to the ingestion of decaying animal substances, stale meat, stale fish, etc., and these cases are not so rare, the mortality under the head of cholera infantum would, so far as colored children are concerned, have been *nil.* It is readily explained upon the ground of the much greater tolerance of the colored race for heat—a fact well established and not needing further elucidation here.

As additional proof the following brief mortality table is adduced. It is taken from the official records of the health office, giving the mortality by wards for the year 1890:

Deaths from Cholera Infantum.[*]

Wards.	June.	July.	August.	Total.
14	..	2	1	3
16	3	3	1	7

In Ward 14 are located slaughter-houses, soap factories, tanneries, melting houses, factories for sausage casings, and other like odoriferous institutions. A thousand smells, dense and strong, assail the passer through this portion of the city. Ward 16 is one of the best wards of the city, free from any odors and smells, nothing more formidable than retailers of meat, and these not many, being located therein. And, still, see what the table says. The ward with the numerous smells had the smallest mortality, and consequently must have had a much smaller number of cases than the other.

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[*] This table was prepared for me by the registrar of vital statistics from the records of our city, by the kindness of the present able health officer, Dr. Pendergrast.

The facts here adduced clearly show, I believe, that *foul odors, decaying vegetation, etc.*—the factors to which the authors mentioned above attach so much importance—really play no rôle at all in the production of summer complaint.

We have also the weight of opinion with us. The well-known Dr. Parrish, of Philadelphia, speaking of summer complaint, says of it: "It begins with the hot weather, increases and becomes more fatal with the rise of the thermometer, and declines with the cool weather in autumn. During its continuance *it may be observed to vary with every prominent change of temperature.*[*] A few very hot days in succession in the month of June are sufficient to call it into action, and during the length of its prevalence a spell of cold weather will diminish if not suppress it."

"Let any one take a walk in a summer morning through the thickly-built lanes and alleys of Philadelphia; he will be struck with the appearance of the children, reclining their heads, as if exhausted, upon the breasts of their mothers, with a pale, languid countenance and clammy skin, a shrunken neck, and other signs of debility arising from their *confinement during the night*[*] *to close and hot apartments.*"[†]

Dr. Joel Shew, the author of an excellent treatise on *The Hydropathic Management of Children in Health and Disease*, referring to the disease under consideration, says thus:

"*Effects of Heat.*—High atmospheric temperature is manifestly a great cause of this disease. It is aptly termed *summer complaint.* It commences with the hot weather, etc."[‡]

Dr. T. Clark Miller, in an article entitled Cholera Infantum and the Weather, says: "Observation also justifies the belief that a continuance of high temperature, for a more or less definite period of six to ten days, is necessary to the development of the disease, in an epidemic form, in the early part of the hot season, while, as the season advances, the number of days of continued high temperature necessary to inaugurate new epidemic outbreaks becomes less. This being true, it is not at all strange that unprofessional grandmothers, as well as physicians, have associated the disease with the continued high temperature as effect and cause, not ignoring the existence of co-operating causes, nor the varying degrees of susceptibility in children."[#] Finkelnburg[‖] has expressed himself in this sense, and has set forth more especially that it is not so much the high temperature *per se* as it is its continuance, and particularly its continuance in the dwellings *even at night*, that is the ætiological factor in the production of the disease and its great mortality.

Dr. A. Seibert, in a graphic study entitled *Cholera Infantum and the Weather*, has demonstrated for some of the largest cities of the United States what had been already graphically shown by Baginski for Berlin—that the disease prevails in the hot months, that the greatest prevalence is in July, that it diminishes in August and ceases in September.

It is true that, though compelled by his charts to admit the direct and decided influence of the weather upon this disease, he does not regard a high temperature as the necessary factor. He says: "Now, then, we have found so far that, though the temperature evidently has some decided relation to the frequency of cholera infantum, yet we have no right to accept our first impression that the higher the more, the lower the temperature the less, frequent do we find this complaint; on the contrary, we must admit that comparison of monthly means of temperature during the summer months shows that the frequency of summer complaint (like its mortality) is independent of the rise and fall of atmospheric temperature."[*]

This conclusion, which is contrary to the direct observation of every practitioner, is based upon an erroneous method of study, as has already been pointed out by Dr. Clark Miller, who very truly says: "A *monthly* record does not satisfy the requirements, from the fact that there may be two or even three weeks of low temperature, giving the month a low mean, and yet enough of days of high temperature to give the month a high mortality record from cholera infantum; or, from a succession of hot days at the end of the month, the cumulative effects show on the mortality records of the following month of perhaps low mean."[†]

But we have most striking proof to demonstrate that a study of the "monthly means of temperature during the summer months" is erroneous and leads to false conclusions. In his summary Dr. Seibert says:

2. Warm weather (either dry or moist) showing minimum daily temperature of *not less than*[‡] 60° F. brings on the epidemic appearance of cholera infantum invariably in every year irrespective, etc.

3. Summer complaint loses its epidemic character as soon as the daily minimal temperature *remains below*[‡] 60° F., as in the latter half of October of nearly every year.

Dr. Turner,[#] in his report upon the Sanitary Condition of Portsmouth, studied the statistics of epidemic infantile diarrhœa (summer complaint) in sixteen towns in England for the ten years from 1867 to 1876. Admitting the influence of meteorological conditions, he finds, by a study of the monthly means of temperature during the summer months for the period given, that a *continued minimal temperature of* 50° F. is necessary to produce epidemic infantile diarrhœa.

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[*] Italics mine.

[†] *Children, their Hydropathic Management in Health and Disease.* By Joel Shew, M. D., Philadelphia, 1852.

[‡] *Ibid.*

[#] *Med. Record*, July 21, 1888.

[‖] *Berlin. klin. Wochenschrift*, No. 49, 1889. Quoted by Baginski.

[*] *Med. Record*, March 24, 1888.

[†] *Ibid.*, July 21, 1888.

[‡] Italics mine.

[#] *Lancet*, July 13, 1878.

If further proof were necessary, it could be brought in the fact that summer complaint was never observed at a steady temperature of 60° F., and certainly not at 50° F.

Schoppe,[*] in a study of cholera infantum, expresses himself plainly and unmistakably to the effect that high temperature is essentially the ætiological factor of this disease.

Dr. A. Baginski, that eminent and painstaking investigator of the diseases of the digestive organs of children, is very explicit upon this point. In an address delivered before the Berliner medicin. Gesellschaft, after referring to the graphic study of this disease made by him for Berlin, and published in his *Verdauungskrankh. der Kinder*, 1884 he says: "Vergleicht mann nun die Thatsachen, die wir für Berlin gefunden haben, mit den Thatsachen aus anderen Städten, so hat mann die eigenthümliche Wahrnehmung, dass in den verschiedensten Grossstädten sowohl Europa's als auch Amerika's die Erscheinung ganz dieselbe ist, und es ist vom höchsten Interesse die Curven welche aus Amerika veröffentlich werden [†] mit unserer Curve zu vergleichen. Es ist fast als ob die Amerikaner die Berliner Curve abgezeichnet hätten, so genau decken sich die Curven, etc. *Unter solchen Verhältnissen ist es begreiflich wenn mann die Höhe der Temperatur für die Mortalität an Kinderdiarrhöen verantwortlich macht.*" [‡] Further on he says: "Wenn mann sich mit dieser Frage so weit abgefunden hat dass mann, ganz allgemein ausgedrückt, die Höhe und lange Dauer der hohen Sommertemperatur als massgebend betrachtet, so," etc.[#]

The general effect of this continuous high temperature, with its attendant heating up of the dwellings, is the production of a state of fever in the infant.

This needs no demonstration here. It is sufficiently proved by experimental investigation and clinical study.[‖]

The ætiological factor having been clearly determined and its general effect upon the organism of the child being evident and well understood, the next question, the logical one, that presented itself was this: What special effect is produced upon the digestive tract?—the system pointed to by the symptomatology as specially involved in this disease. And first as to the *stomach*.

The question of organic lesion required no consideration. It was excluded by the ætiology, by the rapidity of the involvement, and most positively by the many necropsies which have been made and which have shown the stomach free from such lesion. There remained therefore but functional disturbance—a *dyspepsia*—to account for the symptomatology.

That it is but a functional disturbance has apparently never been doubted. Upon this point there is a consensus of medical opinion, demonstrated by the general use of pepsin, lactopeptine, malt, pancreatized preparations, etc., and by the many different nutritive preparations introduced by manufacturers, and all recommended as a panacea for the dyspepsia of summer complaint. It has been clearly and definitely expressed by Dr. L. Emmet Holt. In an article entitled The Antiseptic Treatment of Summer Diarrhœa he says: "One conclusion has long been forcing itself upon my mind with increasing strength every summer—viz., that, excepting the rare cases of pure cholera infantum, nearly all the diarrhœas and intestinal catarrhs of young children are essentially dyspeptic in their origin."[*]

What is the precise nature of this functional disturbance? This was the point to be determined, and in only one way, by taking into consideration the well-established factors in this disease—the ætiological factor, ***heat***, and the morbid condition produced by it, the ***pyrexia***—and ascertaining what special effect they have upon the stomach.

What this effect is has been sufficiently demonstrated in the foregoing—namely, an inhibition or marked restriction of the secretion of ***hydrochloric acid*** in the gastric juice.

In addition to the theoretical considerations which led to this conclusion, and which are amply sufficient in themselves, being based upon incontrovertible and well-established facts, we have direct testimony from the malady itself.

(*a*) Leo,[†] in his studies upon the infantile stomach in health and disease, investigated the condition of its contents in one hundred and four children, laboring under various maladies. Of these, twenty-two were cases of cholera infantum—summer complaint. In all these cases there were found, in large quantities, the volatile fatty acids, butyric, acetic, and lactic acids.

Now, the presence of these acids in any quantity in the stomach contents is due, as has been amply shown by careful investigation, to the absence of HCl in the gastric secretion.[‡] This is to-day an established fact. The explanation thereof is this: All fermentative processes occurring in the digestive tract (and these acids are the results of such) are due to the activity of micro-organisms which abound therein. It is a characteristic of these micro-organisms that a strongly acid medium inhibits their activity. The presence, therefore, of hydrochloric acid, which is a very energetic and strong acid, prevents any and all fermentation.[#]

(*b*) The microscopical examinations of the fæces of summer complaint have shown therein a great number of bacteria, a greater number than are found in the infantile intestinal canal in a state of health. Baginsky,[‖] in his latest discourse on this subject, enumerates eleven different species that he has found therein.

It is an established fact that the greater number of bacteria that are taken up with the food, the drink, the air, are destroyed in the stomach,[*] and though a few may pass it unharmed—*e. g.*, as is claimed by Lesage [†] for his green-coloring bacillus—nevertheless, their activity is inhibited, as the effect of the admixture of the hydrochloric acid to the chymus continues even in the small intestine. [‡]

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[*] Schoppe. *Der Brechdurchfall der Säuglinge u. seine Behandlung*, Bonn, 1887.

[†] I believe reference is here made to the charts of Dr. Seibert, mentioned above.

[‡] Italics mine.

[#] *Berliner klinische Wochenschrift*, No. 46, 1889.

[‖] Litten. Ueber die einwirkung Erhöhter Temperaturen etc., Virchow's *Archiv*, Band 70.—Heat Stroke in Infants, by H. Illoway, *Med. News* (Phila.), August 3, 1891; *Cin. Med. News*, September, 1891.

[*] *N. Y. Med. Jour.*, July 29, 1887.

[†] Ueber die Functionen des normalen u. kranken Magens, etc., im Säuglingsalter. *Berliner klinische Wochen.*, 1888, No. 49.

[‡] Boas. *Allgemeine Diagnost. u. Therap. der Magenkrankh.*—Ewald. *Klinik der Verdauungskrankh.*, vol. ii, p. 26.

[#] Boas. *Loc. cit.*—Macfadyen, Nencki u. Sieber. *Archiv f. experiment. Path. u. Pharmacolog.*, B. 28, H. 1, 2.

[‖] Ueber Cholera Infant. *Berl. klin. Wochen.*, 1889, No. 46.

It is furthermore an established fact that it is the hydrochloric acid in the gastric secretion [#] that is the guardian at the portal of the stomach and destroys or renders harmless the invaders that come from without.

The presence, therefore, of such great numbers of bacteria of varied form demonstrates an inhibition or marked diminution of the (HCl) acid constituent of the gastric juice.

We have corroborative evidence from analogous pathological conditions.

(*c*) Boas, [‖] in his clinical investigations, has found that in the majority of cases of chronic intestinal catarrh there is anacidity (absence of HCl) of the stomach.

Troitzky,[△] in a recent article on the gastric disturbances in children, says that the majority of gastric dyspepsias in children are caused by the deficiency of HCl in the gastric juice.

The large quantities of gas [◊] and the acids, especially the volatile, fatty acids, developed in the stomach as a result of the fermentation therein set up, are the direct cause of the nausea and of the vomiting.

The Bowels.—The bowels are not affected at the outset; after a period, however, a catarrhal condition supervenes, excited by the constant passage of irritating material over the intestinal mucous membrane. The *diarrhœa* is the direct result of the dyspepsia. The food not being properly digested in the stomach and undergoing abnormal changes therein is thus thrown in an improper state into the intestinal canal; it acts as an irritant therein, and provokes frequent and abnormal peristalsis and its own more or less early expulsion.

These fermentative changes begun in the stomach are continued in the intestinal canal, and still others originated there *de novo;* there is consequently a still further development of flatus (additional to that which has passed from the stomach), readily recognizable by the tympanitic condition of the belly; and this, by the distention it produces and the irregular peristalsis it excites *per se*, is the chief source of the pain. Diarrhœa and flatulence as a result of indigestion—dyspepsia—are so firmly established in pathology that they need no further demonstration here. The variegated color of the stools in this disease, as set forth in the symptomatology, is readily explained. The *green* stools, which predominate, derive their color from the presence of a special bacillus, first described by Lesage.[*] This bacillus is found in greatest abundance in the upper two thirds of the intestinal canal, is very rare in the lower third, and altogether absent in the colon. These green stools constitute that part of the intestinal chymus which is expelled from the small intestine and passes to the exterior without previous sojourn in the colon. The *yellow* stool consists of material which has undergone a more normal digestion, and has taken the course usual in the healthy state. Or it may be that the natural color is due to the fact that the previous evacuations had so thoroughly removed the chromogenic bacilli that none were present when this special portion passed their habitat.[†] If it turn green on exposure to the air, it is owing to the presence of this bacillus of Lesage, but so thoroughly concealed in the central portion of the mass as to have been occluded from the air. On reaching the exterior, and exposure to the greater atmosphere, the bacillus, which is decidedly aerobic, is at once roused into activity, and produces its special effect—the green color. The *white* stool (only found in milk-fed infants) is due to this, that the food is expelled too quickly for any change, except curdling, to take place therein [‡]; perhaps also due, in part, to a previous clearance of the intestinal tract of everything except mucus, a considerable quantity of which is found in all stools.

The abundance of the mucus is due to the catarrh of the intestinal mucous membrane.

The *acid* stool is accounted for, as will have been already surmised from the foregoing, by the fermentation developed in the carbohydrate elements of the food and by non-sojourn, or lack of sufficient sojourn, in the large bowel.

The *putrid* stools are due to putrefactive fermentation of the albuminoid constituents of the chymus. I believe that there are two important factors concerned in the development of this form of fermentation — namely, high fever and lesions of the mucous membrane of the large intestine. In support of this belief may be adduced the fact, —a fact so far at least as my observation goes—that putrid stools are not observed until a late period in the disease,[#] at a time when we have both high fever and destructive lesion of the mucous membrane of the large bowel.

The inhibition of the acid fermentation is undoubtedly a necessary preliminary to the development of the putrefactive process. This is accomplished by the high fever which, at the period referred to, reaches 103° F. and more. The lesions in the mucous membrane of the colon, by arresting the normal secretion of this portion of the digestive tract, favor the activity of Bienstock's bacillus, and of other bacilli that may be concerned in putrefactive fermentation. My reason for believing that the lesions in the large bowel are more responsible for the putrid stool than those of other parts of the intestinal tract is this: Under normal conditions the albuminoid constituents of the chymus are not affected in the small intestine; it is only after they have entered the large bowel that their decomposition begins, and it is only therein that the results of such decomposition as indol, skatol, etc., are found.[*] It is evident therefrom that this part of the digestive tract is the place specially adapted for the breaking up of the albuminoids into their ultimate elements.

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[*] Some New Bacterial Poisons, etc. Victor A. Vaughan. *Med. News* (Phila.), August 16, 1890.

[†] *Archives de physiologie normale et path.*, 1888, No. 2. Lesage, etc.

[‡] Macfadyen, Nencki u. Sieber. *Archiv f. experiment. Path. u. Pharmac.*, *loc. cit.*

[#] *Ibid.*, and Boas, *loc. cit.*

[‖] Boas. *Loc. cit.*

[△] Troitzky. *Jahrb. f. Kinderheilk.*, xxxii, 4; *Archives of Pædiatrics*, November, 1891.

[◊] Leo. *Loc. cit.*

[*] Lesage. *Loc. cit.*, also *Bulletin médical*, 1887.

[†] On this point see Baginski, *loc. cit.*

[‡] Beale. *Slight Ailments, their Nature, etc.*, 1882, p. 49.

[#] I hold that the cases called *foudroyante* are not summer complaint. They are cases either of heat stroke (see my paper already referred to, Heat Stroke in Infants) or of true cholera infantum.

It is possible that I am mistaken upon this point; however, there is this additional in favor of it: Bienstock maintains that it is his special bacillus only and solely that effects the decomposition of the albuminoids,[†] and, according to the observations of Macfadyen, Nencki, and Sieber, this bacillus is not found anywhere in the organism but in the large bowel. Putrid stools are of rare occurrence, at least in my experience, and when they do so occur, it is only at a late period, as has been stated in the foregoing. Exceptionally we meet with them at an early period in the malady, and then it is only in children who have been fed strongly nitrogenous food, such as eggs, meat, etc.[‡]

Epitomizing the foregoing, we have the following as the natural history of the malady under consideration:

Summer complaint is a disease produced by the high temperature usually prevalent in the summer months, especially July and August—a high temperature that is continuous day and night.

This high temperature produces in the infant a state of *pyrexia.*

As an effect of this pyrexia we have an inhibition of the secretion of hydrochloric acid, or at least a marked diminution in the quantity secreted, and therefore an inability on the part of the stomach to properly perform its functions, consequently a *dyspepsia.*

As a result of the dyspepsia we have the *diarrhœa* and subsequent *intestinal catarrh.*

Two important conclusions force themselves upon us as a result of this study.

1. Summer complaint is not an *entero-colitis*, as has been hitherto assumed, and as it has been up to the present designated.

2. The treatment with alkalies is unscientific, and not alone that, but positively injurious.

In further support of the first conclusion, we have the results of post-mortem examinations of recent date made by so competent an observer as Dr. L. Emmett Holt.[#] These necropsies demonstrate that—

(*a*) Well-marked lesions are found only at a late period of the disease. Dr. Holt, in concluding his report, says: "We may be pretty certain that at the end of three weeks lesions of a good deal of importance exist in the intestines."

(*b*) The lesions are the results of a catarrh of the intestines.

As to the origin of this catarrh there can be no question. It is a well-established fact in pathology that *dyspepsia*, with its attendant consequences, is the most frequent cause of intestinal catarrh. Ziegler, in his *Lehbruch der path. Anat.*, is very explicit upon this point. He says: "Chronische Katarrhe kommen namentlich bei anhaltender Einfuhr reizender Substanzen in dem Darmkanal und bei abnormer Zersetzung des Darminhaltes &c. vor."[*]

We have also the evidence of Boas, already quoted above, that in most cases of chronic intestinal catarrh there is anacidity of the stomach (lack of HCl).

It is therefore clearly evident that the entero-colitis found at a late date is not the true pathology of summer complaint; it does not in any way constitute the disease, but is itself only a secondary result of a primary pathological condition elsewhere located—to wit, the dyspepsia.

The correctness of the second conclusion is demonstrated by the results of late physiological investigations. It can not be doubted that the alkaline plan of treatment, which has been handed down to us by a former generation, was based upon an erroneous idea as to the normal condition of the chymus in the intestinal tract. It is not so long since that we were taught that the function of the bile and of the intestinal secretions was to render alkaline, or at least neutralize, the acid mass coming from the stomach. Furthermore, the fermentative processes, the bacteria (and their nature) that induce them, were altogether unknown.

To day, however, we know better. The investigations of Ewald[†] have shown us that the chymus in the small intestines is normally acid, and this has been fully corroborated by the extensive studies of Macfadyen, Nencki, and Sieber, already referred to here. We are also familiar with the fermentative processes occurring in the digestive tract and with the nature of the bacteria inducing them. We know that to correct the hyperacidity of the chymus—*i. e.*, to inhibit the fermentative process—it is not an alkali that is required but an acid.

The correctness of the views enunciated here is very strongly attested by this: that upon the basis of this exposition all the numerous contradictions that have hitherto existed between observed facts and accepted theories disappear, and all facts, symptomatology, pathology, and therapeutics are united into one harmonious whole.

We understand readily why this disease prevails only in the summer months.

Why it occurs only in cities.

Why the country is exempt.

Why it is more common among the poor than among the rich.

We understand readily why it is principally hand-fed children that are affected by this malady.

The investigations of Einhorn[‡] as to the time required for the digestion of various artificial foods have shown that in hand-fed children the stomach is always taxed to the utmost to properly perform its function. Now, it is well known to all familiar with gastric pathology that a stomach that is always working under a high pressure, as it were, is very easily functionally disabled and very difficult to restore to its normal state. In these children, therefore, dyspepsia is very easily induced, and, owing to the fact that even the blandest of artificial foods is rather hard of digestion for them, difficult to overcome.

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[*] Macfadyen, Nencki, and Sieber, *loc. cit.*

[†] *Ztschrft. f. klin. Medizin*, 8, 1884.

[‡] For explanation of this difference, see Bienstock's article, *loc. cit.*

[#] *Medical News* (Phila.), June 9, 1888.

[*] Ziegler. *Lehrb. der speciell. path. Anatomie*, p. 536.

[†] Ewald. *Klinik der Verdauungskrankh.*

[‡] *N. Y. Medical Journal*, July 20, 1889. The Time required in the Stomach Digestion of Different Foods in Infants.

Why it is that breast-fed infants are but rarely affected, and when so affected quickly recover.

We understand readily why removal to the farm, to the mountain, to the sea-shore, is so efficient in curing this disease. The child being removed from the sphere of influence of the ætiological factor heat, is naturally relieved of its effects. The fever ceases; as a result, hydrochloric acid is again secreted and the stomach soon recovers its functional power. That this is the *modus operandi* is very strikingly illustrated by a case reported by Dr. Boardman, of Atlantic City. In this case, despite all the advantages of the sea-shore, the disease continued, because the stomach was kept disabled by the continuous administration of a strongly opiated mixture which the parents had brought with them. As soon as this was stopped the child began to recover.*

Why removal even at a late period of the disease is beneficial and effective.

We understand readily why the treatment with alkalies has been unavailing; why all the remedies like pepsin, pancreatin, bismuth, etc., have proved more than useless, and why even antiseptics—*e. g.*, naphthol, sodium salicylate—are of but little benefit. Consequently, why the disease has been hitherto attended by so great a mortality.

Why opium, to any extent, is not only ineffective but positively injurious.

We understand readily why any sudden cool spell occurring amid the torrid summer weather should be attended with immediate improvement of the children sick with this malady. Why such measures as excursions upon the water for a day (as are arranged by various charitable organizations of New York city) should be attended with striking benefit to the sick children.

We understand readily how lavage of the stomach, introduced into pædiatrics by Epstein † and highly lauded by Seibert, ‡ should prove of benefit, especially if it be aided by enemata of cool water, as seems to be the practice of Seibert.

Why rectal injections of cold, # even of ice, water should be beneficial. Cold enemata have a marked cooling effect upon the organism; this has been very clearly shown by Dr. Cantani.‖

The Treatment.—The therapeutic indications are very plain. They may be summed up as follows:

1. Obviation of the ætiological factor, heat.
2. Cure of the dyspepsia.

Of course, where removal to the farm, to the mountain, to the sea-shore is possible, it is the best measure that can be advised, as it fulfills in itself both therapeutic indications. Where, however, this is impossible, and it is so in the majority of cases, I know of no better way of fulfilling indications than by the wet pack as described in the clinical histories.

The advantages of the wet pack are many. It accomplishes rapidly a removal of the heat effects. It invigorates the system. It promotes the cure of the dyspepsia by favoring the secretion of HCl. It is easily applied, and even the dullest mother learns readily its mode of application and the indication therefor. Its use can be kept up through the whole hot season, if necessary; two or three or more applications in the morning, two or three in the afternoon, and, if the indication therefor manifest itself, a repetition at night. There is no danger connected with its use; not the least harm can be done.

I have never found a mother who did not at once consent to its application and who, seeing its beneficial effects, did not carry out faithfully and intelligently the instructions for its use, which were simply to apply the wet pack whenever the child's skin, especially of the head, felt over warm to the touch—a condition usually indicated by marked fretfulness and irritability.

In cases of breast-fed infants, entirely or partially, besides the measures above described, I direct certain hygienic regulations for the mother—viz.:

1. She shall sponge herself (at least the whole upper half of the body, from the root of the neck to the last rib) with cool water (the ordinary hydrant water suffices) twice daily—on rising in the morning and before she nurses the infant, and at night before retiring.

2. That she shall not nurse the child at any time throughout the day when overheated from cooking, washing, etc. She shall wait until she has cooled off and rested herself.

It is a well-established and well-known fact, set forth in numerous treatises, that morbid states affecting the mother have a decided influence upon the milk, and thence upon the child. The importance of these regulations for the welfare of our little patients and their *rationale* will be therefore readily understood without further elucidation.

If the dyspepsia has not been completely relieved by the wet pack, we can aid Nature to a rapid cure by (*a*) medication and (*b*) regulation of diet.

As regards medication, there is only one remedy indicated, and that is hydrochloric acid. The value of the acid in all cases where the natural secretion is deficient therein (malignant disease excepted) is fully established. Its usefulness in the malady under consideration was already long ago attested by Jacobi.* Lesage † advises an acid as the remedy *par excellence* for green diarrhœa.

It is remarkable to observe how quickly the dyspepsia and its symptoms disappear under the use of the acid. The green or white stools give place to stools of normal color and consistence, all offensiveness disappears, the development of flatus is inhibited, the appetite becomes good, and the child regains its bright and cheerful look.

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* *Med. Record*, Oct. 4, 1890.

† *Prager med. Wochenschr.*, Band 45, 1880.

‡ *Archives of Pædiatrics*, April, 1889.

# *Annals of Gynæcol. and Pæd.*, December, 1890.

‖ *Berl. klin. Wochenschr.*, No. 31, 1890.

* *Loc. cit.*

† *Loc. cit.*

Mode of Administration.—The acid may be administered combined with milk according to Rudisch's formula, which has been detailed above, or it may be given in doses of two drops in a teaspoonful of water every two to three hours at first; later on, as the dyspepsia improves, at longer intervals—three to four times daily. I have found this method very effective in many cases of infantile dyspepsia due to deficient secretion of HCl. I generally prefer this latter method, but where the child is very much enfeebled, either from neglect or improper treatment, I should employ Rudisch's method for the first few days, and as soon as the child gained in strength give the acid in the ordinary way.

The preparation I employed and still usually employ is the acidum hydrochloric dilutum of the U. S. P.

In exceptionally severe cases that had already lasted some time—two weeks and over—before coming under treatment, the administration of two to three grains of the bismuth subnitrate (in powder) every two to three hours (for one or two days) proved an excellent adjuvant to the treatment above described.

For the flatulence and the pain thereby caused, I found the rectal injection of a small quantity of a strong decoction of peppermint, or the administration of lac asæ fœtidæ, in half-drachm doses, of excellent service. The regulation of the diet is of the greatest importance in the treatment of dyspepsia. The quantity of food (and I usually advise no other than plain cow's milk from a reliable dairy, boiled and kept in a closed vessel, though I have occasionally found some artificial foods and condensed milk well borne) for each feeding should be somewhat less than the normal quantity.

The number of feedings must not be beyond the accepted standard; better less, but never more. The child must not take a bottle to bed with it (a very common practice among people). As it need not be fed more than twice in the night, a fresh bottle should be prepared for it about 11 P. M. and 3 A. M. When milk is badly tolerated in any form, I have found nothing better than the decoction of barley, prepared according to Jacobi's[*] directions. With all this there must be enjoined upon the mother an observance of the most scrupulous cleanliness of all clothing of the child, of its bedding, and of all its feeding utensils. It is almost superfluous to say here that an abundance of fresh air is insisted upon; the child to be taken out of doors in the early morning hours and later in the evening, if possible to a park. This is of special importance to those living in rather cramped and close apartments, that are generally more like bake-ovens.

Of the many measures otherwise proposed for the treatment of this disease, but two require any consideration here—*lavage of the stomach* and *intestinal irrigation.*

To lavage there are many serious objections. *It requires the skilled hand of a physician for its application.* This alone would be an insuperable obstacle to its general use. The poor can not pay a physician for frequently repeated and long-continued visits, and but very few physicians will burden themselves with such a task where there is no prospect of remuneration.

It is true that it has been maintained that one, or at most two, applications suffice for the cure.[*] Experience, however, has not substantiated this allegation. A moment's consideration will show that it can not be so. The ætiological factor being constantly active, the pathological condition that necessitated the lavage is reproduced, and such reproduction certainly makes requisite a repetition of the remedial measures.

It is not by any means so harmless and simple a measure as we have been led to believe. In an article on the Treatment of Diarrhœa in Early Life, Dr. H. C. Chapin reports the occurrence of fatal syncope from introduction of the tube and distention of the stomach with water.[†] But lately a case was reported in which longitudinal rupture of the mucous coat near the pyloric extremity and death resulted from lavage of the stomach.

It does not fulfill the therapeutic indications in the measure requisite. This needs no further elucidation here, for it will be at once apparent to all that, if the views as to the ætiology and pathology of summer complaint as set forth here be correct (and they undoubtedly are), lavage of the stomach is a very inadequate remedy—too inadequate to be employed when simpler and much more effective measures are at our command.

As a matter of fact, despite the glowing accounts from Epstein's clinic and the high recommendations of Seibert, lavage of the stomach has found but little favor in the eyes of practitioners and is but rarely resorted to, undoubtedly for reasons as set forth above.

Intestinal Irrigation.—I believe I am keeping within the bounds of truth when I say that no such process is at all resorted to (generally); the injection of a little cool water into the rectum is not *intestinal irrigation*—not at all as understood by its author.

Rectal injections of cold water are not sufficiently effective in any way. The same objection, therefore, holds good here also: *They do not fulfill the therapeutic indications in the measure requisite.* Taking all things into consideration, it can be safely maintained that the plan of treatment as outlined and advocated here is far superior to any that has been devised. It answers thoroughly all the therapeutic indications furnished by a careful study of the ætiology and pathology of the disease. It is simple, and, once instructed as to its purposes, any person of ordinary intelligence can carry it out. It is economic, it is cheap, and therefore within reach of the poorest of the poor.

NOTE.—As will be seen, I have made no mention in the section on treatment of sterilization of milk, now regarded as one of the most important factors to recovery. This, from my standpoint, becomes unnecessary. I seek to accomplish and do accomplish, as the cases here set forth show, a restoration of the *normal antiseptic qualities* of the gastric juice. This I hold a far superior method, as it effects not alone the destruction of bacteria introduced from without, but also the inhibition of the activity of the bacteria that normally inhabit the digestive tract.

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[*] *Loc. cit.*

[*] Seibert. *Archives of Pædiatrics, loc. cit.*

[†] *N. Y. Med. Record*, June 21, 1890.

And this superiority is still further enhanced by the knowledge afforded us by the valuable investigations of Leeds and Davis, that the nutritive value of milk is destroyed by sterilization.*

My directions as to milk used for infant food are: That it shall be obtained from a reliable dairy; that it shall be gotten twice daily, morning and evening; that it shall be boiled as soon as received for half an hour in a vessel kept solely for that purpose; that it shall be kept covered, not allowing the cover to be off at any time longer than necessary to take therefrom the modicum of milk needed for each feeding; that it shall be kept in a cool place; if that is impossible, and it frequently is among the poor, I direct that it be put in a large vessel containing cool water, to which a piece of ice is from time to time added.

CASES OF HÆMORRHAGE FROM THE NORMALLY IMPLANTED PLACENTA.†

By JAMES P. MARSH, M. D.,
TROY, N. Y.

When from any cause the normally attached placenta has become separated from the uterus, previous to the birth of the child, of necessity a hæmorrhage must occur. Writers upon this subject have separated these hæmorrhages into two distinct varieties—internal and external—according as the blood is retained in the uterine cavity or, flowing through the genital canal, appears externally. Internal hæmorrhage has been called concealed or hidden hæmorrhage, while, on the other hand, external hæmorrhage has been designated as frank or open hæmorrhage. The cases which I am about to report belong to this latter variety:

Case I (St. Ann's Infant Asylum).—H. K., aged eighteen, native of the United States, unmarried, primipara. This patient began to menstruate at fourteen and, although always regular, has suffered considerable pain at each period. Her general health has always been good.

On November 15, 1890, at about 10 A. M., without any premonition, this patient was taken with an excessive hæmorrhage from the uterus. At the time of its occurrence she was at the expiration of pregnancy, but was up and walking about the ward. I was hastily summoned and found that she had lost a large quantity of blood and was still flowing, although there was an entire absence of labor pains. The cervix was not dilated. By external palpation a vertex (L. O. A.) presentation could be made out. I placed a firm vaginal tamponade in position and awaited further developments. At 2 P. M. labor began in earnest, and as the blood had soaked through the tamponade it was removed. The os was found to be dilated to the size of a circle an inch in diameter. An attempt to dilate by means of Barnes's dilators failed, and, as bleeding became very severe, I again tamponed the patient and called in consultation my colleague on the staff, Dr. John B. Harvie. It was decided to place the patient under chloroform, and then, if possible, by means of the fingers effect dilatation, and either perform version or apply the forceps as might seem best. After severe and prolonged labor on the part of Dr. Harvie and myself, we succeeded in dilating the cervix sufficiently to enable me to make a high application of the forceps. This I did, and after considerable effort succeeded in delivering her of a dead child. The perinæum was not lacerated. The placenta came away readily and without delay. Upon examination, it showed that it had suffered a detachment over about one fourth of its superficial area.

The patient's pulse went up to 130 for two or three days after delivery, and there was also a minor degree of febrile movement; otherwise convalescence was uneventful, and it is hardly necessary to burden you with the temperature and pulse charts.

Case II (St. Ann's Infant Asylum).—A. C., aged twenty, native of the United States, unmarried, primipara.

This patient began to menstruate when fifteen years of age, and has always been regular. She has never suffered from any sexual difficulty and her general health has always been good. However, on her admission to the hospital, she was suffering from syphilis in its secondary stage.

On December 26, 1891, at about 1 A. M., while in bed and asleep, she was taken with a severe hæmorrhage from the uterus. She was at the end of pregnancy, and had been expecting labor for about ten days. This sudden hæmorrhage was not accompanied by any pain. She did not give any history of a fall or injury, and denied the taking of any drug. I saw the patient at 3 A. M., and found her blanched and restless, with a pulse of 120. She was still flowing, but not so severely as at first. Examination showed a presentation L. O. A., and the cervix dilated to the size of a circle an inch in diameter. No labor pains had as yet occurred. Believing that I was dealing with a detached placenta, I ruptured the membranes and firmly tamponed the vagina. Labor pains came on promptly and a dead child was born at 5 A. M. By a mistake the placenta was destroyed before I had a chance to examine it. Convalescence was uneventful.

Case III.—On October 11, 1891, I was called about 3 P. M. by Dr. F. J. Thompkins, of Lansingburg, to see this patient. She was twenty-nine years of age, a native of England, and had been married several years. She had had one miscarriage some years previously. She was eight months advanced in pregnancy, and was known to be suffering from albuminuria for about ten days previous to my visit. At about noon, without pain and without previous injury, while up and about the house she was taken with a sudden and severe hæmorrhage from the uterus. Dr. Thompkins was summoned and found her flowing severely, and at once introduced a tampon. Upon my arrival I found the patient blanched and restless, with a pulse of 130. On removing the tampon the os was found dilated to the size of a circle an inch and a quarter in diameter, and protruding from the right side was a smooth, moderately firm substance which proved to be a large blood clot. The placental tissue could not be felt by the finger introduced as far as possible into the cervix. The case was diagnosticated as one of partial detachment of the placenta. We placed the patient under chloroform and proceeded to complete manually the dilatation of the cervix. After about three quarters of an hour's work the cervical opening became sufficiently enlarged to allow me to make a high application of the forceps. In due course of time delivery was completed, the child being dead. Dr. Thompkins had charge of the patient during convalescence. He writes me that the albumin did not disappear from the urine for nearly three months, and that the recovery of the patient was long and tedious, but perfect.

Case IV.—On May 15, 1892, at noon, Mrs. F. was taken in labor. Dr. E. D. Ferguson, her regular attendant, being absent from the city, I was called to her at 8 P. M. This woman had always been strong and healthy, and had given birth to five children. Upon my arrival she informed me that she had lost considerable blood, but, as I did not find much blood in the vagina, and as the labor pains and the maternal pulse were good, I attributed the flow to an unduly vascular condition of the cervix. The os was dilated to the size of a circle two inches in diameter. The membranes were unruptured and the presentation L. O. A. The pains being good, matters progressed all right until 9.45 P. M., when Dr. Ferguson arrived, and I turned the case over to him. At 10.30 he delivered the patient of a dead child. The placenta was easily extracted and showed evidences of detachment over about one sixth of its area. Convalescence was uneventful.

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* *Am. Jour. of the Med. Sci.*, June, 1891.

† Read before the Second District Branch of the New York State Medical Association at its eighth annual meeting.

This accident of pregnancy has been attributed by different authors to various causes. Dr. Barnes says that lax and feeble tissue, fatty degeneration, and calcareous deposits may stand in a causative relation to this accident. In my first case there is no assignable cause unless we attribute to the mental condition of the mother a causative influence. It will be remembered that she was unmarried and about to undergo the pangs of maternity amid strangers and within the walls of a charitable institution. To a sensitive nature such a condition might produce enough distress of mind to exert a detrimental influence on the growth and development of the placenta. The second case can be clearly attributed to syphilis. The third, with equal certainty, can be ascribed to albuminuria. The fourth case was probably due to an injury, as this patient, when closely questioned, remembered having hit her abdomen a severe blow by striking it against a table two days before labor came on.

It has been maintained that this accident is more apt to occur in women who have borne a large number of children; but my cases do not confirm this statement, as three were primiparæ and only one was a multipara. My own opinion is that albuminuria and syphilis are the most frequent agents which bring about this condition.

The diagnosis is not difficult. Given a woman in the last months of pregnancy, taken with a severe hæmorrhage from the uterus, and it is one of three conditions—to wit:

(*a*) Accidental hæmorrhage from a normally planted placenta.

(*b*) Unavoidable hæmorrhage from a placenta prævia.

(*c*) Hæmorrhage from uterine hydatids. (See a case reported by me in the *New York Medical Journal*, vol. xlviii, p. 93.)

Accidental hæmorrhage usually comes on before labor pains set in, while unavoidable hæmorrhage from placenta prævia comes on with the pains or soon after their inception. However, the great point of distinction between the accidental hæmorrhage of partial detachment of the placenta and the unavoidable hæmorrhage of placenta prævia is that in accidental hæmorrhage the flow ceases during the pains, because the placenta is compressed between the uterine wall and the body of the child, whereas in unavoidable hæmorrhage the flow is increased by the pains, because the placenta is further detached from its uterine site during their occurrence. To distinguish the two conditions above referred to from the hæmorrhage occurring before the expulsion of uterine hydatids is not always so easy. As a rule, the hæmorrhage produced by hydatids is not so profuse nor so steady. Hæmorrhage from hydatids may be, and frequently is, a mere show for several days, or perhaps two or three weeks, before labor really sets in, and the hæmorrhage becomes more marked. Of course, the proof positive of the hydatid condition is the finding of the hydatid bodies or cysts in the blood coming from the uterine cavity.

Partial detachment of the placenta is almost invariably attended with a laceration of the fœtal part of the same and a consequent fatal bleeding on the part of the child. The child, therefore, as in my four cases, is almost always born dead. And, indeed, this condition is not without danger to the mother, for without prompt and intelligent aid many a mother will be lost.

As to what this aid shall consist in seems to be very well agreed upon by the various authorities. A few advise the use of ergot; personally, I do not believe that it does any good.

If the bleeding is not severe and the os only partially dilated, the proper procedure is to rupture the membranes, as this removes intra-uterine pressure, and afterward to put in a firm tamponade, being careful, however, to watch that severe internal hæmorrhage is not produced by a damming back of the blood within the uterine cavity. This is the treatment for mild cases; but if the hæmorrhage is severe the os should be dilated as rapidly as possible by either Barnes's dilators or the fingers, and the forceps applied or version performed, as may seem best in each case. Version and the forceps will each have its advocate, but my own preference is for the forceps, as there is no comfort to the obstetrician so great as the knowledge of having the head where he knows that it is under complete control. If the mother is *in extremis*, then, of course, stimulation and restoratives must be employed to bring about reaction before so severe a procedure as a high application of the forceps is resorted to. Although the child may have been extracted, the danger to the mother has not ceased, because uteri in which this accident has occurred are exceedingly prone to contract irregularly or the placenta to be retained, and in this manner another exhausting hæmorrhage brought about. This, of course, is treated according to the rules for the treatment of this condition complicating normal labor. Were I asked to sum up as briefly as possible the treatment applicable to the largest number of cases, I should say: "Empty the uterus as soon as possible."

1739 FIFTH AVENUE.

PUERPERAL TETANUS.*

By J. W. IRWIN, M. D.,
LOUISVILLE, KY.

THE patient of whom I shall speak was not quite seventeen years of age. She was sent to me from another city. I saw her for the first time in January, 1892. She had reached the ninth month of utero-gestation with her first child. She was of medium height, strong and healthy, of dark complexion, and weighed one hundred and thirty pounds. Her previous history did not reveal any hereditary nervous or mental disorders, or troubles of any kind. The organs of digestion were in a healthy condition; there was no œdema; the kidneys were found to be free from disease. On February 13th, at full term, she gave birth to a female child, which weighed seven pounds and a half. The labor lasted nine hours and was less severe than is usually the case in primiparæ. The amniotic fluid was not excessive in quantity, and the abdomen was not unusually enlarged. The placenta came away eighteen minutes after the birth of the child. Very little hæmorrhage occurred. All clots and shreds of membranes were carefully and thoroughly removed. The vaginal tissues were found to be free from abrasions, and there was no laceration of the neck of the womb. The patient had not been exhausted by the labor.

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* Read before the Clinical Society of Louisville, June 21, 1892.

Thirty minutes after the birth of the child the patient became very weak and faint, and the action of the heart grew slow and feeble. Evidence of internal hæmorrhage was sought for and none found. The patient's head was then lowered beyond the horizontal line of the body, but the alarming condition continued for fully forty minutes. My esteemed friend, Dr. Wathen, was sent for to see the case in consultation, but, on his arrival, the patient was revived. A careful examination of the case failed to discover the cause of the alarming symptoms. There was no cardiac disorder, and the kidneys were found to be free from disease. The patient had been well nourished and had not been exposed to cold or dampness.

From this time the patient did not have a symptom indicating any disturbance until on the morning of February 24th, or eleven days after her confinement, when she felt a choking sensation in the throat and a fullness about the jaws. She had pain in the back and the head was drawn slightly backward. There was a sense of tightness around the waist and in the chest. She complained of a tremulous feeling, and at the same time the body was drenched with perspiration. On the night of February 24th the patient did not sleep, owing to severe paroxysms of pain in the back, which at times encircled the body. On the morning of February 25th the jaws had almost closed. Barring an occasional attack of trembling in the masseter muscles, the muscular contractions about the face were permanent. The muscles of the back, chest, and abdomen were firmly contracted and accompanied by a feeling of suffocation. Respiration was irregular and only twelve to the minute. The lochia was unaffected. The axillary temperature was 102·4° F. The urine was scanty and of a dark-brown color, and it did not contain albumin. Pain in the back and chest was continuous, but it was more severe in paroxysms. There was much hyperæsthesia present, and exposure to a temperature of 70° caused the patient great discomfort. The bowels were sluggish, but small doses of saline laxatives caused free movements.

The expression of the patient, as well as her general condition, showed that something more severe than an ordinary fever had attacked her. The face wore the expression of intense suffering. The occipito-frontalis muscle was contracted tightly, which caused the flesh and skin over the forehead to stand out in numerous hard bunches, between which were deep fissures running in every direction. The brows were drawn downward and inward, which gave to the eyes a sunken appearance. The muscles of the nose, cheeks, lips, and chin were in a state of contraction like those of the forehead. The wings of the nose were drawn outward and upward, which gave to that organ a flattened appearance. The eyes were suffused and the lids were so much contracted as to cause the impression that they were too short to cover the balls.

On February 27th, at 9 A. M., the temperature was 100·4° F., pulse 124, weak and irregular; at 9 P. M., temperature 101·2° F., pulse 130 and feeble. Perspiration now occurred in paroxysms and after severe attacks of pain. Hyperæsthesia was more felt. Pain and contractions of the muscles of the back were more severe at night. Frequent paroxysms of nervous trembling attended by copious perspiration prevented her sleeping. On February 28th, at 9 A. M., pulse 120, respiration 16 and irregular, temperature 100° F.; at 9 P. M., temperature 101·2° F., pulse still irregular and feeble, and patient, on attempting to move or turn in the bed, had attacks of pain accompanied by opisthotonus. From this time until March 16th the condition of the patient remained practically unchanged. Twice within the previous sixteen days the patient's temperature fell to 96° F. in the morning, but as evening approached it went up to 99° and 100° F. At no time during the course of the disease did the patient's temperature exceed 102·4° F., and this occurred once only—at the beginning of the attack. The temperature usually ranged between 99° and 100° F. The pulse varied very much in numbers and character, at times 108 and again 160, irregular and quite feeble.

On March 16th the jaws became relaxed and the mouth could be opened without much effort to the extent of admitting the handle of a spoon.

The muscles of the chest and back had become relaxed and the paroxysmal contractions occurred less frequently. Pain was not as constant. At the end of six weeks from the beginning of the attack the patient was allowed to return to her home. A letter was received from her bearing date of April 14th saying that she was entirely well.

The treatment of this patient, owing to the fixed condition of the jaws, presented some difficulties, but the absence of an upper molar tooth made the task much easier than it otherwise might have been. The act of swallowing was difficult and painful, and occasionally fluids escaped through the nose. The diet consisted of milk, consomme, liquid peptonoids, and strained soups. To this was added from six to eight ounces of whisky daily. The hypodermic use of half-grain doses of sulphate of morphine as occasion required for relief of pain was found to be serviceable. Insomnia was a troublesome concomitant of the disease, and this condition I found to yield to twenty-grain doses of the hydrate of chloral every second hour better than to any other remedy. Sulphonal and chloralamid were given without any effect.

Later in the disease a mild, continuous current of electricity was applied to the spine, but, as it caused too much pain, its use was abandoned.

Iron and quinine were given in tonic doses with apparently good effect.

From the description of the case I have just given, it will be observed as one of those rare affections following parturition known as "puerperal tetanus." In looking over the literature of this disease, I find that many obstetricians have never seen a case of puerperal tetanus. In Galabin's *Midwifery*, page 698, I find the following statement: "Puerperal tetanus is extremely rare (in Great Britain); no instance of it occurred in 46,089 in the Guy's Hospital Lying-in Charity."

From every source, including the carefully collected cases of Dr. Garrigues, published in the *American Journal of Obstetrics*, volume xv, page 769, I find only thirty-two instances recorded as having occurred after full term in Europe and America during the last one hundred years. Currie reported to the Medical Society of London the first case in 1792.

The disease occurs more frequently in hot countries and the mortality is very great. Parvin's *Obstetrics*, page 590, gives the mortality in hot countries as 80·4 per cent. The mortality in Europe and America in cases occurring after parturition at full term is 84·4 per cent. These remarks do not apply to tetanus occurring after abortion, for in such cases the mortality is even greater. Twenty-eight recorded cases of tetanus following abortion show a mortality of 93·3 per cent.

Until within the last few years the cause of this terrible disease was thought to be difficult labor, the retention of membranes in the womb, nervous excitement, mental distress, and exposure to cold and dampness. Climate, it was thought, conduced much to the number of its victims.

In 1885 Nicolaier discovered the cause of tetanus to be a bacillus which corresponded to the Koch bacillus of the septicæmia of mice, which is especially found in horse dung. Rosenbach, in 1886, confirmed Nicolaier's discovery, and, from their combined evidence, the disease, it is now believed, is infectious in character, and communicated chiefly from horse dung.

THE USE OF THE

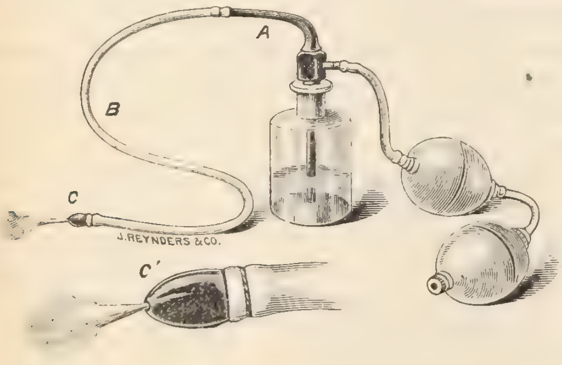
SPRAY IN DISEASES OF THE STOMACH.

By MAX EINHORN, M. D.,
INSTRUCTOR IN CLINICAL MEDICINE
AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL;
PHYSICIAN TO THE GERMAN DISPENSARY.

Modern therapeusis owes its foremost advance greatly to the methods of local treatment. In the treatment of gastric disorders several ways have been adopted by which the stomach could be directly influenced. They consist in the use of lavage of the stomach without or with medicinal agencies, and in the direct application of the electric current.

Taking into consideration the scarcity of means we have at hand for the local treatment of the stomach, every endeavor to enlarge therapeusis in this respect must be welcome. By means of the spray we are enabled to cover large surfaces with a comparatively small amount of fluid. Thus, by this method we can apply directly medicaments of a toxic nature without fear of poisoning. The greatest gain of this method has been achieved, as is well known, in the treatment of diseases of the throat.

It appeared important to me to make use of the spray in diseases of the stomach. The usual spray apparatus can be modified in such a way that, instead of the hard-rubber branch of the apparatus, the same branch is made of soft rubber and lengthened. In this way the gastric spray apparatus consists of the usual spray apparatus, in which there is a soft Nélaton tube, of seventy centimetres length, inserted between the hard-rubber spray end (one centimetre in length) and the hard-rubber branch running to the bottle, within the Nélaton tubing. Another soft tube of thinner caliber connects the inner capillary tube with the nozzle. (See figure.) *



As the spray is generated by the air forced by the bulb through the tube, taking up the fluid and dividing it into fine particles, the medicament will necessarily come in contact with every part touched by the air.

If the stomach is empty when spraying, the air that enters will expand the organ and transport the fluid to every part of its interior.

The administration of the spray in gastrotherapeusis may perhaps be a suitable form for fulfilling the following purposes:

1. To disinfect the mucous membrane of the stomach.
2. To exert an astringent effect.
3. To produce analgesia in gastralgia of local character (from ulcer, cicatrix, or cancer).

Method.—As it is only possible to spray the stomach in its empty state, it will be necessary to administer the spray either when fasting or after a previous lavage.

A preceding lavage will always be indicated if we intend to disinfect or apply astringents, for in these instances it is necessary first to remove the mucus with the micro-organisms imbedded therein. In order to exert an analgesic influence, the lavage may perhaps be omitted.

After filling the apparatus with a sufficient amount of the required solution, the tube end is dipped into warm water and thereupon inserted into the stomach of the patient. It is best to begin with the spray as soon as the nozzle (being in the stomach) has a distance of about 45 ctm. from the lips of the patient. Provided the nozzle is not covered by the stomach wall, there can be heard during the spraying, at times in the neighborhood of the patient—otherwise by putting the ear on the gastric region—the sound characteristic of the spray. In case the opening is covered, the spray is generally unable to pass, and it then is necessary to insert the tube a little farther.

Even if the spray works well from the beginning, it will be expedient after a while to introduce the tube a little farther, in order to have the spray work from different points.

In several cases I have made use of this method for therapeutic purposes, and can assert that the administration of the spray is easy and convenient.

As to the results obtained, I intend to make a report later on, after having gathered sufficient experience with this method of treatment.

107 East Sixty-fifth Street.

The Special Meeting of the New York Academy of Medicine held last Monday, "to consider the present condition of those in quarantine," acted wisely in that it did nothing. This course was adopted on an intimation from the Governor of the State that any definite expression of opinion by the academy at that particular time might complicate the problems with which he had to deal.

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* The gastric spray apparatus is manufactured by J. Reynders & Co., 303 Fourth Avenue, New York.

THE
NEW YORK MEDICAL JOURNAL,
A Weekly Review of Medicine.
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Edited by Frank P. Foster, M. D.

NEW YORK, SATURDAY, SEPTEMBER 17, 1892.

CHOLERA IN NEW YORK.

On Wednesday it was announced by the board of health that five deaths from Asiatic cholera had occurred in the city since the 6th inst. Except one married couple, the victims had lived in parts of the town situated considerable distances apart. The infection has not yet spread to other persons occupying the houses in which the dead had lived. The announcement was very properly delayed until the necessary bacteriological examinations had demonstrated the true nature of the disease. In the mean time the same precautions were taken as would have been taken if the disease had been positively known at the outset to be cholera. The way in which the infection reached the city has not yet been ascertained.

The occurrence is, of course, unfortunate, but it was not unexpected. It has been felt ever since the news of the prevalence of cholera in Hamburg that it was sure to reach New York Bay, and that it would prove almost impossible to keep it altogether out of the city. We are well prepared to limit its spread, and there is no occasion for alarm. Hard work must and will continue to be done by the health officer of the port and by the city board of health, and that work, we are confident, will prevent the disease from becoming epidemic. The lesson of the visitation should not be lost, however. Chiefly, it is that we must put the purity of our water supply beyond suspicion. It will undoubtedly prove cheapest in the end for the city to buy the whole Croton water shed and divert from the lake all streams liable to pollution.

THE FIRE ISLAND INCIDENT.

In our last issue we expressed a preference for Fire Island as a place of detention for healthy persons taken from infected ships. It is not an ideal place of refuge, for it is difficult of access and it is surrounded by a population ready, as has been seen during the week, to proceed to violent and brutal methods in enforcing their preposterous objections to its use as a refuge. It has been taken by the State authorities, but, we are sorry to be obliged to say, its occupation could not be effected until a display of military force had been made. There was no actual bloodshed, but the conduct of the people of Islip and the neighborhood—in which, to the shame of our profession it must be confessed, the local health officials, including a physician, are understood to have taken part—was no less barbarous and devilish than one might expect to meet with in the wilds of Africa. It was a disgrace to our country. There is absolutely nothing to be said in mitigation of it. At first the ridiculous pretense was set up that there was danger of the spread of infection, but it soon came to be known that some imaginary risk to the shell-fish industry was at the bottom of the mob's wild acts. It should have been within the power of the local physicians, together with the few other clear-headed persons that we still presume the region counts among its inhabitants, to demonstrate to the ignorant baymen the utter groundlessness of such fears; and it should also have been recognized by them as a duty. In grateful contrast to their cowardly conduct we have the gallant and humane course pursued by a New York physician, Dr. Walter Vought, who was put in charge of the island as a deputy health officer. Dr. Vought's management under great difficulties was most commendable. In him at least the medical profession has shown to advantage

THE CAUSATION OF CONGO FEVER.

Surgeon T. H. Parke, the comrade of Stanley in the late Emin Pasha expedition across Africa, has written in the *Lancet* for May 28th some observations respecting the causes of fever as experienced by himself and his companions. His own sharpest febrile attack, during the early part of the journey, followed a ducking while he was trying to cross a tributary of the Congo River. The attack lasted a week. This was the beginning of a long series of experiences, in the course of which he found that every time he got a wetting in equatorial Africa he presently suffered from a seizure of intermittent fever. It mattered not whether the wetting was with river water, to which the exposure was frequent in the crossing of streams, or by wading through swamps, or by the drenching rain of tropical showers.

Even the donkeys, after each drenching, manifested febrile action corresponding closely to that of their human fellow-travelers. After fording any stream of considerable size the poor animals would become sick and dispirited, with drooping ears and staring coat, rapid arterial pulsation, and high internal temperature, which phenomena recurred with monotonous regularity. All the European officers fared the same as Surgeon Parke after an immersion or after an exposure to a chilling breeze during or soon after active perspiration. Exposure to the hot sun, if prolonged, was a cause of fever, especially if the head and spine were not sufficiently protected. In fact, all pronounced alternations of the external temperature were competent to affect the heat-regulating apparatus of the body. "We are still," he says, "far from having arrived at any degree of certainty regarding the relations sustained by the micro-organisms that have been discovered in the blood and the pathogenesis of disease whose phenomena appear to be accompanied by their presence." Why it is that two hours passed in exposures such as have been indicated above should be succeeded rapidly by similar trains of symptoms in men and in quadrupeds is a question not yet definitely solved by the bacteriologists. The long-sought link in the chain of causation is yet missing.

MINOR PARAGRAPHS.

THE RESTRICTION OF IMMIGRATION IN ENGLAND.

When the President of the United States issued his order prohibiting the landing of immigrants from cholera-infected districts until they had completed a quarantine of twenty days, the English press was general in its comment on the state of "scare" the United States was in. Since that time our northern neighbor, an English province, has issued a similar order. And we now learn from the *British Medical Journal* for September 3d that the Local Government Board has a regulation providing that the passengers on a cholera-infected ship must satisfy the medical officer of the port as to their names, places of destination, and addresses at these places before they can land; that the medical officer shall notify the sanitary authorities of the towns to which the immigrants are proceeding; and that the landing of the person is prohibited if information on these points can not be given. This regulation has been amended by a new order that extends these provisions, in the discretion of the medical officers of the various ports, to all ships, whether cholera-infected or not. This is virtually a prohibition of immigration, as the questions can hardly be answered by the average immigrant unless he is very carefully coached.

PHENACETIN FOR SENILE VESICAL IRRITATION.

Dr. Traill Green has reported in the *University Medical Magazine* for June the successful use of this drug in cases of frequent micturition in the aged. Prompt relief was frequently obtained after a ten-grain dose taken at bed-time. The soothing action of the remedy seemed not to be limited to the nocturnal irritability, but was prolonged over upon the following day, so that the micturition intervals, both night and day, became nearly normal. In two of his cases there was a reduction from six and seven micturitions nightly to one only. One patient for a time did not need to get up at all during the night. No effect was reported as to the amount of urine secreted, and it did not appear to be necessary to use the phenacetin continuously in order to get the desired result. There were no effects from this use of the drug that would appear to contra-indicate it even among those patients who were enfeebled by their weight of years. The use of the drug is said not to be advisable in cases of prostatic enlargement.

THE NORTH CAROLINA BOARD OF HEALTH.

The vacancy in this board caused by the decease of Dr. Thomas F. Wood was filled on September 7th by the election of Dr. George G. Thomas, of Wilmington, one of the editors of the *North Carolina Medical Journal*, of which Dr. Wood had been the senior editor for many years. Dr. Richard H. Lewis, of Raleigh, was chosen to succeed the late Dr. Wood as secretary. The *Bulletin* of the board for August comments upon the demise of Dr. Wood as follows: "Let every citizen of the State, who can appreciate the services of one whose undying energies have for so many years been given for the honor of his State and the welfare of her people, bow the head in sorrow." The late secretary had seen the State board grow from an infantile affair, which in 1878 had an appropriation of $100, to a grandly useful and important body.

SPECIALISTS IN GASTRIC DISEASES.

Professor C. A. Ewald says, in his recently published work on *Diseases of the Stomach*, anent specialists in gastric diseases, that it may happen that one is consulted especially by patients with stomach troubles because he has occupied himself chiefly with the study of these conditions, and has acquired a reputation for special experience. But physicians and the public are influenced not by special but by general medical knowledge, which is not acquired by a physician who, immediately after graduation, sets himself up as a specialist for stomach diseases. The close and complicated relation existing between diseases of the stomach and those of other organs makes it impossible to find satisfactory special occupation in the treatment of the former alone, because the field is too small and the technique is so easily learned and is so limited in its scope. These remarks are, in general, applicable to many other specialists besides that of the stomach.

A BACTERIOLOGIST FOR THE CITY BOARD OF HEALTH.

The board of health of the city of New York has taken a step that is worthy not only of commendation but also of imitation by other municipal boards of health. Heretofore the disinfecting corps has consisted of sixteen laymen. This division has been reorganized and is now denominated the division of pathology, bacteriology, and disinfection. The chief of the division is to be an expert bacteriologist, and he will have ten physicians under his direction as disinfectors, each of whom has a certain district to oversee. The salary of the bacteriologist in chief is $3,000 per annum. Professor Herman M. Biggs, who has been in charge of the Carnegie Laboratory for so many years, has been appointed chief of the division. The appointment is an excellent one.

THE RETIREMENT OF SIR JOSEPH LISTER.

The eminent originator of modern antiseptic surgery, having attained the age of sixty-five, has been retired from his post as lecturer on clinical surgery at Kings College Hospital, London. The rule requiring his retirement on account of age has been commented on quite freely as an unnecessarily harsh measure, for the distinguished surgeon is no less capable and active today than when he was invited down to London. The hospital does not altogether lose his services, for by a special act of grace Lister will continue for a year longer to occupy his position on the attending staff.

THE DISINFECTION OF CHOLERAIC DEJECTIONS.

Dr. Amos Sawyer, of Hillsboro, Illinois, writes to us in criticism of a clause in the New York Board of Health's circular of advice—that, namely, in which it says: "Pour boiling water on and put a strong solution of carbolic acid in the discharges." Dr. Sawyer suggests the use of concentrated lye instead of boiling water, inasmuch as the latter causes an upward current of air which may carry with it germs that have never come in contact with the boiling water, thus endangering the attendants' lives. He adds that it is his practice to have his diphtheritic patients expectorate into such a solution.

NEW YORK AS REFLECTED FROM NEW ORLEANS.

The New Orleans *Times-Democrat* for September 4th asserted that cholera was at that time prevalent in New York, but that the authorities here talked of "cholerine." Every resident of New York knows that the talk about "cholerine" has been wholly confined to the medical officers of ships that have come into the bay having or having had cholera on board. The same newspaper publishes an interview with a local sanitarian in which that person indulges freely in denunciation of New York quarantine methods. That sort of thing we are accustomed to, and we know that it is entirely undeserved by the present sanitary officials of New York.

RECTOR VIRCHOW.

Dr. Rudolph Virchow has been chosen as the new rector magnificus of the University of Berlin. It is said that he has been twice defeated when standing as a candidate for the rectorship. This has been due to political antagonisms. It is doubtful if, even at the present time, provided Prince Bismarck had still the reins of government, Virchow's friends could have secured for him the votes required to honor the university by putting its most eminent alumnus temporarily at its head.

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending September 13, 1892:

DISEASES.	Week ending Sept. 6.		Week ending Sept. 13.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	0	0	0	0
Typhoid fever	40	16	55	4
Scarlet fever	38	4	45	7
Cerebro-spinal meningitis	0	3	0	0
Measles	50	9	51	8
Diphtheria	66	7	75	10
Small-pox	13	3	0	1
Varicella	0	0	0	0
Whooping-cough	0	0	0	0

New York Physicians and the Islip Savages.—A call has been made upon the president of the Medical Society of the County of New York to call a special meeting to consider the matters mentioned in the appeal, which is in the form of the following letter:

"Sir: The undersigned, members of the Medical Society of the County of New York, look with sorrow and amazement at the inhuman and cowardly behavior of those residents of Long Island who have opposed, either by lawless threats or by invoking the power of the courts, the attempts to land passengers from quarantined vessels upon Fire Island, and regard the greed, selfishness, and ignorance displayed by them as a national disgrace.

"We respectfully request you, at your earliest convenience, to call a special meeting of this society to take action upon the following resolutions, and to consider any other matters which may be presented concerning the threatened epidemic of cholera:

"*Resolved*, That the use of Fire Island for the isolation of passengers arriving at the port of New York upon cholera-infected vessels will not in any way endanger the health of residents of Long Island.

"*Resolved*, That, while the safety not alone of the city of New York but of the whole country requires stringent quarantine regulations, common humanity and justice demand that all passengers be promptly removed from cholera-infected vessels.

"J. West Roosevelt, M. D.; A. H. Buckmaster, M. D.; W. Gilman Thompson, M. D.; H. P. Loomis, M. D.; George M. Swift, M. D.; W. R. Townsend, M. D.; V. P. Gibney, M. D.; R. B. Carmichael, M. D.; Morris J. Asch, M. D.; O. B. Douglas, M. D.; Charles T. Poore, M. D.; Wendell C. Phillips, M. D.; Charles B. Kelsey, M. D.; Robert Abbe, M. D.; Frank P. Foster, M. D.; Lucius W. Hotchkiss, M. D.; Edward L. Keyes, M. D.; Louis F. Bishop, M. D.; Reed B. Granger, M. D.; John E. Weeks, M. D.; Andrew F. Currier, M. D."

The New York Academy of Medicine.—The next meeting of the Section in Public Health will be held on Monday evening, the 19th inst. Papers are announced as follows: The Present Status of Quarantine Laws, with a Consideration of their Administration, by Dr. S. T. Armstrong; How long shall a Cholera-infected Vessel be detained at Quarantine? by Dr. A. L. Carroll; General Disinfection: Steam, Sulphur, Sublimate, etc., by Dr. J. H. Raymond; The Biological Characters of the Cholera Spirillum, by Dr. George M. Sternberg, of the army; Local Measures of Prevention and Relief in New York City, by Dr. Stephen Smith; and The Profession and Cholera: Suggestions, by Dr. A. Jacobi.

A Five Years' Course.—According to the *British Medical Journal*, all medical students in the United Kingdom who matriculate on the 1st of October will have to pursue a five years' course of study before they can take the final examinations that give them the right to practice. We hope that this step will be duly considered by those who still deny the necessity of a three years' course for the American medical student.

The University of Vienna.—Dr. Krafft-Ebing has been appointed to succeed the deceased Professor Meynert in the chair of psychiatry. Dr. Josef Englisch has been promoted to be professor extraordinary of surgery, and Dr. Ferdinand Hochstetter to a like position in anatomy.

The Brooklyn Surgical Society.—The special order for the meeting of Thursday, the 15th inst., was a paper by Dr. W. C. Wood, entitled A Comparison of Several Methods of treating Flat-foot.

The Navy Medical Department.—Last week Surgeon-General Browne made an official visit to the Brooklyn Navy Yard, in company with Medical Director Delavan Bloodgood.

The New York Polyclinic.—Dr. Arpad G. Gerster has resigned from the chair of surgery.

Change of Address.—Dr. John F. Russell, to No. 21 West Eleventh Street.

The Death of Dr. Samuel J. Brady, of Brooklyn, occurred on September 8th in the fifty-third year of his age. He was a graduate of Bellevue Hospital Medical College, of the class of 1868, one of the original medical staff at St. Catharine's Hospital, and surgeon of the Police Department. He died somewhat suddenly and a writing was found which showed that he had been a sufferer from renal disease for fifteen years, and had foreseen that death by uræmic coma might overtake him at any time.

The Death of Dr. John James Reese, of Philadelphia, on the 4th inst., removed the veteran toxicologist of the University of Pennsylvania. He resigned in October, 1891, the professorate in medical jurisprudence held by him since 1865, and became professor emeritus. He was the author of a *Manual of Toxicology* and edited the seventh edition of Taylor's *Medical Jurisprudence*. He was physician to St. Joseph's Hospital and other institutions. He was in his seventy-fifth year at the time of his death, which took place at Atlantic City.

Society Meetings for the Coming Week:

Monday, *September 19th:* New York Academy of Medicine (Section in Hygiene and Public Health); Hartford, Conn., Medical Society; Chicago Medical Society.

Tuesday, *September 20th:* American Gynæcological Society (first day—Brooklyn); American Orthopædic Association (first day—New York); American Rhinological Association (first day—Indianapolis); Medical Societies of the Counties of Kings and Westchester, N. Y.; Ogdensburgh Medical Association; Connecticut River Valley Medical Association (Bellows Falls, Vt.); Baltimore Academy of Medicine.

Wednesday, *September 21st:* American Gynæcological Society (second day); American Orthopædic Association (second day); American Rhinological Association (second day); Northwestern Medical and Surgical Society of New York (private); Harlem Medical Association of the City of New York; Medical Society of the County of Allegany (quarterly—New York); New Jersey Academy of Medicine (Newark).

Thursday, *September 22d:* American Gynæcological Society (third day); American Orthopædic Association (third day); American Rhinological Association (third day); Brooklyn Surgical Society; New Bedford, Mass., Society for Medical Improvement (private).

Friday, *September 23d:* Yorkville Medical Association (private); New York Society of German Physicians; New York Clinical Society (private); Philadelphia Clinical Society; Philadelphia Laryngological Society.

Letters to the Editor.

A FOREIGN BODY IN THE TRACHEA.

106 West Seventy-ninth Street, *July 13, 1892.*

To the Editor of the New York Medical Journal:

Sir: The following rather unusual case I desire to report as of possible interest:

On the evening of July 10th I was hastily summoned to see a woman who was said to be strangling from a piece of meat she had swallowed. I found a woman of fifty much exhausted, pulse very weak, suffering from much dyspnœa and repeated attacks of violent coughing.

In the majority of cases the laryngoscopic examination would have been rendered difficult or impossible. Fortunately she proved to be a person of more than average intelligence, so that after the application of a four-per-cent. solution of cocaine the laryngeal mirror was easily introduced. A careful examination of the larynx revealed nothing, the vestibules or sinuses of Morgagni, a common seat for foreign bodies, being entirely free.

A second search, however, showed, low down, beneath the vocal cords and posteriorly, a dark mass projecting and but imperfectly seen.

The patient was rapidly growing weaker from her violent attempts to dislodge the obstruction by coughing; so immediate interference seemed called for, and an external opening suggested itself as very probably necessary.

It was determined, however, to first attempt the removal endolaryngeally. The long œsophageal forceps was thereupon introduced under the mirror, and with success. The first attempt brought up a small bit of meat, and the second a detachment and partial removal of the mass, which was expelled by the patient. It proved to be a piece of gristly corned beef, some half an inch long.

The patient, after its removal, experienced immediate relief, and, though the throat was sore, on the next day was able to go out.

It seems remarkable that so large a mass could have proceeded so far without being inspired deeper into the trachea. The patient admitted having attempted its removal with her finger, which might have had the effect of driving it still deeper.

Thomas J. Harris, M. D.

Book Notices.

Traité de médecine. Publié sous la direction de MM. Charcot, Bouchard et Brissaud. Tome i, par MM. Charrin, Le Gendre, Roger, Chantemesse, Fernand Widal. Avec figures dans le texte. Paris: G. Masson, 1891. Pp. 957.

Twenty young and learned doctors, worthy representatives of the Paris medical school, have undertaken to give to the world, in a treatise of six volumes, all that is most worthy of interest in general pathology. The work is logically conceived. Considerations on the nature and causes of disease are followed by those on the receptivity of the patient as modified by heredity, over-fatigue, nervous exhaustion, shock, traumatism, famine, etc. The description of infectious and eruptive diseases is followed by that of maladies affecting the various systems in their natural sequence of digestive, respiratory, circulatory, and nervous. Considering the prevalent doctrines on microbiology, it is just that many and exhaustive chapters (pages 1 to 230) on the agents provocative of infection should precede those devoted to infectious diseases. Their author, A. Charrin, after many years of clinical work, has devoted himself of late to bacteriological research in Professor Bouchard's laboratory. Charrin is a coworker with Bouchard in the latter's studies upon the diseases of nutrition, and has been trained to conceive of the organism as a chemical laboratory in which all transmutation of material is necessarily accompanied by determinable, even ponderable, results. As he is of a keen intelligence, we find him not only impregnated with the scientific theories emanating from the workers in the many adjoining laboratories, but also creative. It is to him that we owe our first experimental knowledge (October 24, 1887) of inoculation with a chemical virus formed in the pyocyanic malady.

Charrin seeks the microbe in its usual haunts, in air, in earth, in water, and in liquid and solid foods, recognizing it to be everywhere either an accidental factor or an habitual guest. Rele-
g dom, g the microbes to their natural division of the organic king-
existen r author studies their habits, the laws governing their
follows th and the enemies impeding or curtailing their life. He
notes the eff arasites in their invasions of the animal kingdom,
tions if the dist of their presence in all the organs, and ques-
simply to an exha ances produced by them are to be ascribed
to the latter of subst on of the receptive soil or to the addition
to the laws of its own es eliminated by the microbe according
These substances are ysiological development.
which probably is the rea parently toxic to the microbe itself,
tiply indefinitely. The rea that it does not increase and mul-
power and the rarity of a se of the variable persistence of its
be readily determined, inasmu reception accorded it can not
fects in the body are limited in s the chemical changes it ef-
the chemical analysis of the excre tation, as can be gauged by
Le Gendre, the author of the cha tc.
eases of Nutrition, is also one of Bo rs on Disorders and Dis-
follows with the conscientiousness al ard's disciples, and he
the fluctuations of the economy in p s characterizing him
whether determined by morbid predispo ological conditions,
thritic and scrofulous diatheses, or directly ons, such as the ar-
endent upon acute
disease.
Roger, associated with Charrin in Bou
studies the many diseases that are common to rd's laboratory,
of the animal kingdom, such as tuberculosis, various species
In every branch of pathology, histologic ies, etc.
and microbiology take a more and more prom onsiderations
when the discussion of typhoid fever falls to th nt place, and
like Chantemesse, who unites in himself so ma t of a man
talents, being at the same time a histologist, a pre-eminent
and an excellent clinician, we may well expect t teriologist,
ject treated in the masterly manner it is. Each s nd the sub-
of the subject receives an exhaustive consideratio rate aspect
Chantemesse and Vidal were the first (1887)
pleomorphism of the typhoid bacillus, whose co observe the
have been the subject of their particular study. ions of life
presence to be constant during the acme of they affirm its
the cadaver they have always found it in the ver, and in
mesenteric nodes, Peyer's patches, cardiac muscl r, spleen,
(six times), meninges (four out of eight times), an iver, lungs
(the only time they sought for it there). Cha he testicles
searches for the microbe in the blood of the cadav messe's re-
been negative, and he believes that it exists th ave always
tionally. The typhoid-fever patient is a source o but excep-
reason of his fæces, of his albuminous urine, a ontagion by
tinal hæmorrhages by the freeing of microbes f his intes-
masses. The virus is transmitted by the air, by m collected
er, by cloth-

ing, by dust, by garbage, and by excreta. The preponderating influence of potable water in this propagation has been admitted from the remotest antiquity, and the data collected by Pettenkofer and his disciples are demonstrative of the weighty importance of the soil. The drainage of the land and the filtration of rain-water displace the microbe from its first habitus the soil, and deposit it in the water. But Eberth's bacillus does not thrive in water, and hence the colonies must necessarily be continually renewed, in order to be constantly found there. This fact is proved by Chantemesse and others, and may account for the non-occurrence of the bacillus in the waters examined in Vienna and Berlin, although it is possible that, if the polymorphism of the bacillus had been better known, it would have been recognized among the microbes described as existing in these waters.

As the various foods that enter into the usual alimentation of man, such as milk, butter, cheese, etc., furnish, according to Heim and Hesse, excellent culture media for the typhoid bacillus, it can be readily seen that the intestines should frequently be primarily infested with microbes. Their penetration into the organism of their host is largely dependent upon the condition of the latter, and we may even have conditions similar to those described by Verneuil as "latent microbism."

The influence of secondary conditions, such as exhaustion, cold, overcrowding, and famine, is undeniable, as Pasteur was the first to prove experimentally. The struggle between the variably virulent microbe and its prey is not always equally sustained, and the variety of infection resulting is largely dependent on the personal peculiarities of the prey, inasmuch as a weakened viscus is the one most readily implicated. The object of an enlightened therapeutist will be to nullify the effort of the microbe and to destroy its toxic emanations.

Widal finds in his studies on *la grippe* that the mortality and barometric curves are parallel, the maxima and minima of the one corresponding to the maxima and minima of the other. No specific microbe has as yet been found to account for the much-disputed contagion, whose existence, however, has been amply proved on many occasions.

Satisfactory articles by Widal on dengue, on paludism, on cholera, on yellow fever, and on the pest end the first volume.

A Text-book of Morbid Histology for Students and Practitioners. By Rubert Boyce, M. B., M. R. C. S., Assistant Professor of Pathology in University College, London. With One Hundred and Thirty Colored Illustrations. New York: D. Appleton & Co., 1892. Pp. xxiv to 477.

The constant improvements in instruments and technique, as well as the increase in the number of trained observers, have served to augment our knowledge of morbid histology more rapidly than that of the other branches of medical science. As a result of this progress, new works on the subject are necessary to embody for the student the mass of material that is scattered throughout the current literature of many countries, as well as to present the results of the original investigations of their respective authors. Any work that combines these desiderata needs no apology for its existence. The systematic and comprehensive presentation of the latest facts, accessible only in a scattered literature, and divested as they are here of all superfluities of expression, saves the reader's time during perusal and renders laborious search for references supererogatory.

The author has endeavored, in this account of the chief histological changes met with in disease, to avoid arbitrary methods of classification, and he arranges his subject matter as naturally as possible. In the nineteen pages in the first chapter there are directions for hardening, imbedding, cutting, staining, and mounting. The following chapters present the subject of inflammation, describing the retrogressive tissue changes and the vascular phenomena; the fate of the exudates; the means and methods of repair; the fibrous, hyaline, and caseous transformations; the processes of healing, of absorption of solid bodies, and of the repair of special structures; and the processes of degeneration, pigmentation, and allied tissue transformations. Following this is the chapter on the mycotic infective processes, that commences with a description of the changes in soft chancre, cutaneous and phlegmonous erysipelas, wound diphtheria, and gangrene that are locally infective processes; and passes on to diphtheria, pneumonia, typhoid fever, and cholera, in which the tissue changes occur at certain points of election; to the pyæmic processes in which there are general disseminations of the infectious organism throughout the body, producing general changes; to the chronic infective processes in which the specific virus acts more slowly and over a longer period; and finally to a description of the lesions produced by some of the higher fungi.

We agree with Professor Horsley, who states in his introduction to this volume that it is difficult "at the present time, when the causation of neoplasms is yet so obscure and indeterminate, for any one to put forward any division of tumors except that which Mr. Boyce has determined upon." In this arrangement the tumor-like hyperplasias of the more highly specialized tissues are first described; then the hyperplasias of the fibrous, cartilaginous, bony, fatty, and myxomatous tissues; and from these we pass to a consideration of the rapidly growing and malignant forms of the preceding groups and to that of the epithelial tumors.

The author has wisely abandoned the old methods of classification of cysts, and describes them according to their site of development.

The chapter on congenital formations will be found to be very interesting, although the terms "rests" and "remains," for "portions of tissue that get cut off from the parent mass and that often become widely separated from their original place of origin, as well as for the vestigial remains of former structures," strike the reader's attention by their oddity.

The following chapters treat of the vascular system, and the hæmatopoietic system; though Addison's disease, myxœdema, acromegaly, and diseases of the bones and of the skin receive each a separate chapter. The succeeding chapters are devoted to special organs and the morbid changes found in diseases of each of them, with a concluding chapter on tissue changes produced by the animal parasites.

To assist the student whose time will permit of further research, the author appends a well-selected bibliography.

The colored illustrations of micro-photographs enhance the value of the work, serving as standards for comparison and reference to those that do microscopical work, and being of greater advantage to the happily diminishing number of students whose college course does not include laboratory work in pathology. We would not have it understood that the work will be useful to students alone, for the reasons that we have mentioned will make it a desirable volume for those practitioners who can not send a specimen for examination to a histologist living but a short distance away; and the author's use of inch, half-inch, and quarter-inch objectives in taking his micro-photographs makes their definition the same as may be obtained by the modest microscopical equipment that is to be found in the hands of most practitioners.

We would call attention to an error in the subscription to Fig. 74, which is a section of a malignant adenoma, and not of malignant œdema.

The Diseases of the Stomach. By C. A. Ewald, Extraordinary Professor of Medicine at the University of Berlin, etc. Authorized Translation from the Second German Edition, with Special Additions by the Author. By Morris Manges, A. M., M. D., Attending Physician to the Outdoor Department, Mount Sinai Hospital, New York City, etc. With Thirty Illustrations. New York: D. Appleton & Company, 1892. Pp. xi to 497.

The reputation that the American people have of being a nation of dyspeptics is not altogether without foundation; and where gastric disorders are moderately prevalent it behooves all physicians who desire to be of the greatest possible benefit to their patients to be well informed regarding the latest methods of diagnosis and treatment of diseases of the stomach. Professor Ewald's *Klinik der Verdauungskrankheiten* is now in press in Germany in a third edition, and, as an evidence that its popularity is not confined to that country, it may be stated that the New Sydenham Society selected the second edition for translation for their series of medical works. This translation has had the advantage of the author's revision, and includes whatever new material will appear in the forthcoming German edition, though it does not include the first portion of the original work, which treats of the physiology of digestion in its practical relations, these parts being independent of each other.

The work is arranged in a series of twelve lectures as they were delivered in the author's course at the University of Berlin. The opening chapters are devoted to the methods of examination of the functions and contents of the stomach. The author does not share the alarm that has been expressed by some observers regarding the danger of using the stomach tube, especially as the soft-rubber tube is now so generally employed. Total acidity is determined by titration, and Congo red and tropœolin are considered the best dyes for determining whether the acidity depends upon free acids or upon acid salts, though Günzberg's reagent is regarded as the most sensitive test that can be employed, and Boas's test is commended. The best practical test for lactic acid is the sense of smell, and Uffelmann's test is commended as the best for a chemical examination. Various tests are given for determining the amount of free and loosely combined hydrochloric acid. The methods of determining the reactions of albumin and of peptone, as well as of the rapidity of proteolysis, are described. The iodide-of-potassium test is considered a satisfactory one to determine the power of absorption of the stomach; but the determination of the motor functions of the stomach, either by the salol or by the oil test, is open to criticism. The physical examination of the stomach by palpation and its distention by air, gas, or water are satisfactorily described, as well as the methods of its irrigation and of electrization.

The third lecture is on "stenoses and strictures" of the cardia; and for either condition gastrostomy is regarded as the best method of affording relief. The necessity of keeping the usual œsophageal diverticulum above the contraction free from putrefactive material is referred to, and elaborate directions regarding alimentation after gastrostomy are given.

The fourth lecture, on "stenoses and strictures" of the pylorus, calls attention to the fact that there is no absolute standard for the size of the normal stomach, and, while megastria is an anatomical condition, it is not necessarily a pathological one. Inspection, percussion, auscultation, and mensuration are the means by which the size of the stomach may be ascertained in the living subject, and the author emphasizes the necessity of distinguishing between functional and organic dilatations. The various factors causing the latter are carefully considered, as well as the influence that the condition exercises upon the digestive processes. The aim of treatment is to ease and assist gastric digestion by means of a carefully selected diet and appropriate medication, and to prevent stagnation of the gastric contents and check the fermentative processes developing therein. The author considers that the best surgical treatment for this condition is a matter for discussion by surgeons, but he expresses himself as confident of the advantages that operative procedures will produce.

In the lecture on cancer of the stomach, the author considers the question of the age at which the disease is likely to occur a matter of great interest. He gives Golding Bird credit for priority in announcing the absence of free hydrochloric acid in this condition, a symptom that is not infallible, as it may be absent in the normal state of the stomach. The treatment is symptomatic.

In the lecture on ulcer of the stomach the various theories regarding its causation are reviewed, and its diagnosis from gastralgia and gastric cancer is presented in tabular form. In the remarks on diagnosis the following contradictory italicized sentences occur (page 261): "I refrain from introducing the tube in all cases of ulcer *in which the diagnosis can be made in another way;* and I desist so much the more, since in *these* cases the examination of the stomach contents *does not establish the diagnosis;* and since it does not aid us in the treatment. On the other hand, I have frequently observed that severe hæmorrhages, which could not be controlled in any other way, have been checked by repeated washing out of the stomach with ice-cold water." Precedence in treatment is naturally given to the rest cure, and a short paragraph disposes of the question of operative measures.

The chapter on acute gastritis is prefaced by a review of the relations existing between the stomach, liver, and intestines. We think the author is correct in holding that every acute gastritis is really a toxic gastritis. The remarks on the treatment of the various divisions of this affection will prove very useful, not because they suggest so much that is new, but because they emphasize the value of what is old.

The chapter on chronic gastritis presents the pathological changes occurring in that condition in a most thorough fashion. The disease is subdivided into a simple and a mucous form, and the symptoms of each are described. In this chapter the author includes gastric atony, considering the neurotic form rare, but the secondary form associated with nearly all affections which involve large areas of the gastric mucous membrane. It seems to us that this subject should have been included in the chapter on gastric neuroses.

In treatment, hydrochloric acid is given a prominent position. Attention is called to the absurdity of giving pepsin, unless it has been demonstrated that that ferment is absent. If there is complete absence of hydrochloric acid, pancreatin or papoid may be administered, though the former preparation is useless under any other condition. While the reported results of experimenters are conflicting in regard to the usefulness of bitters and carminatives, yet the author advises that they be employed. And lavage is accorded a prominent place as a remedial measure. A golden rule is given in the sentence: "The regulation of the diet of the dyspeptic begins in the mouth."

Professor R. Ewald is the author of the chapter on the neuroses of the stomach, and he reviews the anatomy and physiology of the organ. Hunger is considered to be the symptom of activity of one or several cerebral centers, and appetite bears the same relation to it that drowsiness bears to sleep. The subject is subdivided into neuroses caused by conditions of irritation, either sensory, secretory, or motor; those caused by conditions of depression; a mixed form; and those due to reflexes from other organs upon the gastric nerves. This writer deals with his topics quite as skillfully as his brother.

The final chapter is devoted to a consideration of the correlation of the diseases of the stomach to those of other organs or to systemic diseases, such as tuberculosis, anæmia, and gout. Attention is called to the fact that "not even the most careful chemical examination of the functions of the stomach will put within our grasp the divining-rod which will magically call forth the fountain of knowledge from the adamantine rocks of obscure symptoms! Even to-day the old saying is true that

> 'Ubi ratio sine experimentis mendax,
> Ita experientia sine ratione fallax.'"

We feel assured that the work will attain the popularity that its thoroughness deserves.

Regional Anatomy in its Relation to Medicine and Surgery. By GEORGE McCLELLAN, M. D., Lecturer on Descriptive and Regional Anatomy at the Pennsylvania School of Anatomy, etc. Illustrated from Photographs taken by the Author of his own Dissections, expressly designed and prepared for this Work, and colored by him after Nature. In Two Volumes. Vol. II. Philadelphia: J. B. Lippincott Company, 1892. Pp. xiv to 414.

THE good impression made by the first volume of this work is deepened by the present one, and the words of commendation already bestowed might be repeated with emphasis. This volume is devoted to the lower half of the body, divided for the purpose of study into the regions of the abdomen, groin, pelvis, perinæum, and back, the lumbar and gluteal regions, and the regions of the hip, thigh, knee, leg, ankle, and foot, each of which is clearly and understandingly described in its relations to surgery and to medicine as well. The colored plates, forty-four in number, also maintain the high character of those in the previous volume. Dr. McClellan is to be congratulated on his success in the production of so valuable a work.

Human Monstrosities. By BARTON COOKE HIRST, M. D., Professor of Obstetrics in the University of Pennsylvania, and GEORGE A. PIERSOL, M. D., Professor of Histology and Embryology in the University of Pennsylvania. Part III. Illustrated with Nine Photographic Reproductions and Thirty-four Woodcuts. Philadelphia: Lea Brothers & Co., 1892.

THE third part of this work, that must certainly be classed as an *édition de luxe* of teratology, contains the chapters on cyclocephalus, octocephalus, omphalositic monsters, and composite monsters. The authors give Geoffroy Saint-Hilaire's division of cyclocephalus into ethmocephalus, cebocephalus, rhinocephalus, cyclocephalus, and stomocephalus, and define each of these classes; but they prefer Ahlfeld's simpler division based on the approach or fusion of the eyes, and accept Dareste's explanation that the deformity is the result of an arrest in the development of the anterior cerebral vesicle. In the section on omphalositic single monsters we are presented with the views of Ahlfeld and of Breus regarding their formation. The authors consider Geoffroy Saint Hilaire's term a better one than Ahlfeld's (acardiacus) for this monster, because the heart is often present in some degree of development. To Geoffroy Saint-Hilaire's divisions into paracephalic, acephalic, and anideous monsters they add a fourth—asomatic—that was not recognized by that pioneer in teratology. The section on composite monsters adopts Förster's classification.

The plates furnish excellent illustrations of rhinocephalus, cyclocephalus, a skeleton of the latter, paracephalus, three specimens of acephalus, and give a front and rear view of a diprosopus. Besides these there are numerous woodcuts that elucidate the text. This part well sustains the character of the work.

BOOKS, ETC., RECEIVED.

A Text-book of the Principles and Practice of Medicine, for the Use of Medical Students and Practitioners. By Henry M. Lyman, A. M., M. D., Professor of the Principles and Practice of Medicine in Rush Medical College, Chicago. With One Hundred and Seventy Illustrations. Philadelphia: Lea Brothers & Co., 1892. Pp. xix–17 to 923. [Price, $4.75.]

Napheys's Modern Therapeutics, Medical and Surgical, including the Diseases of Women and Children. A Compendium of Recent Formulæ and Therapeutical Directions from the Practice of Eminent Contemporary Physicians, American and Foreign. Ninth Edition, revised and enlarged. Vol. I. General Medicine and Diseases of Children. By Allen J. Smith, M. D., Assistant Demonstrator of Morbid Anatomy and Pathological Histology, etc., University of Pennsylvania, and J. Aubrey Davis, M. D., Assistant Demonstrator of Obstetrics, University of Pennsylvania. Philadelphia: P. Blakiston, Son, & Co., 1892. Pp. xx–17 to 1034. [Price, $6.]

A Hand-book of Hygiene and Sanitary Science. By George Wilson, M. A., M. D., F. R. S. Edin., Fellow of the Sanitary Institute of Great Britain, etc. Seventh Edition. Philadelphia: P. Blakiston, Son, & Co., 1892. Pp. xxxvi to 751. [Price, $3.25.]

The Essentials of Histology. Descriptive and Practical. For the Use of Students. By E. A. Schafer, F. R. S., Jodrell Professor of Physiology in the University College, London. Third Edition, revised and enlarged. Illustrated by more than Three Hundred Figures, many of which are New. Philadelphia: Lea Brothers & Co., 1892. Pp. xi to 302. [Price, $3.]

A Manual of Chemistry, Inorganic and Organic, with an Introduction to the Study of Chemistry. By Arthur P. Luff, M. D., B. Sc. (Lond.), M. R. C. P., Fellow of the Institute of Chemistry, etc. Illustrated with Thirty-six Engravings. Philadelphia: Lea Brothers & Co., 1892. Pp. xvi to 525. [Price, $2.]

The Student's Hand-book of Surgical Operations. By Frederick Treves, F. R. C. S., Surgeon to and Lecturer on Anatomy at the London Hospital, etc. With Ninety-four Illustrations. (Abridged from the Author's *Manual of Operative Surgery.*) Philadelphia: Lea Brothers & Co., 1892. Pp. xv to 495. [Price, $2.50.]

The Principles and Practice of Bandaging. By Gwilym G. Davis, M. D., Universities of Pennsylvania and Göttingen. Detroit: George S. Davis, 1892. Pp. xi to 61. [Price, $3.]

A Treatise on Epidemic Cholera and Allied Diseases. By A. B. Palmer, M. D., LL. D., Professor of Pathology, Practice of Medicine, and Clinical Medicine in the College of Medicine and Surgery in the University of Michigan. Ann Arbor: Register Publishing House, 1892. Pp. iv–5 to 224. [Price, $1.50.]

A Plea for Special State Provision for Epileptics. By Theodore Diller, M. D. [Reprinted from the *Medical News.*]

A Review of Twenty-five Cases of Abdominal Section. By Reuben Peterson, M. D., Grand Rapids, Mich. [Reprinted from the *Proceedings of the Michigan State Medical Society.*]

A Valuable Experiment bearing upon Sympathetic Ophthalmia, with a Critical Review of the Subject. By Robert L. Randolph, M. D., Baltimore. [Reprinted from the *Archives of Ophthalmology.*]

The Technique of Laparotomies. Address before the Section in Surgery, Surgical Specialties, and Obstetrics of the Illinois State Medical Society. By J. H. Etheridge, M. D., Chicago. [Reprinted from the *Chicago Medical Recorder.*]

Operative Treatment of Spinal Caries. By DeForest Willard, M. D., Philadelphia. [Reprinted from the *Transactions of the American Orthopædic Association.*]

Experiments in Pneumonotomy and Pneumonectomy. Suturing of Lung. By De Forest Willard, M. D., Philadelphia. [Reprinted from the *University Medical Magazine.*]

The Operative Treatment of the Deformities resulting from Infantile Spinal and Cerebral Spastic Paralyses. By De Forest Willard, M. D., Philadelphia. [Reprinted from the *Medical News.*]

Medical Gynæcology. By James H. Etheridge, M. D., Chicago. [Reprinted from the *American Journal of the Medical Sciences.*]

Second Annual Report of the Midwifery Dispensary, 314 Broome Street, New York city.

Reports on the Progress of Medicine.

GENERAL SURGERY.

By M. L. FOSTER, M. D.

Ulcers of the Legs.—Finzi (*Lancet*, June 11, 1892) makes some very good suggestions regarding the treatment of ulcers of the leg when the patient can not be confined to bed. In most cases of ulcers of an indolent nature a persistent course of an astringent iron tonic, with total abstinence from alcoholic stimulants, is of great benefit. Bandaging should not be left to the patient or friends, but should be done daily, every other day, or every third day, by the physician himself. Rest and elevation of the leg are useful adjuncts to treatment, and sometimes essential, but many ulcers can be cured without interfering with the usual vocations of the patients, and some seem to progress more rapidly then than when completely at rest. In most, if not in all, cases of indolent or callous ulcer an acute inflammatory condition of the ulcer and of the skin immediately surrounding it should be produced, to induce the absorption of the products of the chronic inflammation, and then it should be treated by sedative applications. Local applications are considered under three heads: those in which the medicament to be applied is dissolved in water, those in which it is applied dry, and those in which it is mixed with, dissolved in, or emulsified with oil. When water is used as a menstruum frequent dressing is required, and the method can not be carried out satisfactorily without rest in bed. When the water is allowed to evaporate, the dressing becomes practically a dry one. Sometimes this will give a brilliant result. Covering the application with an impermeable fabric or poulticing is sometimes soothing; in other cases it produces eczema, and in others œdematous granulations when continued too long. Under this heading the author considers the application of rubber bandages, which he condemns, as they keep the whole limb in a sodden and relaxed condition.

The dry and the oleaginous dressings he considers the most useful when it is necessary for the patient to be about. Foremost among the dry applications he places iodoform, especially when the ulcers are sloughing or spreading, and frequently when they are indolent. In many cases iodoform causes, after one or more applications, eczema of the skin, irritation, burning pain, and profuse watery discharge, the condition required to start healing in callous and indolent ulcers.

The oleaginous preparations may be divided into the stimulating and the sedative; the former for the indolent, the latter for the healing, inflamed, or eczematous condition. Of the former, the blister is one of the most powerful and rapid; then come a strong iodoform ointment, carbolic oil, emulsion of coal tar in oil, and the official ointments of tar, resin, eucalyptus, salicylic and carbolic acids, and red and white precipitate. Among the sedatives are emulsions of lime water, a saturated solution of borax in olive oil or linseed oil, an emulsion of liquor plumbi subacetatis with oils, the ointments of zinc, oleate of zinc, calamine, boric acid, acetate and carbonate of lead, and bismuth. The ointment made of equal parts of oleate of bismuth and soft paraffin is particularly recommended.

Congenital Contraction of the Ascending and Transverse Colon.—Dodd (*ibid.*) reports the case of an infant in which he found post mortem a congenital contraction of the ascending and transverse colon, which was throughout but little larger than an ordinary lead-pencil. The head of the cæcum was normal; the vermiform appendix about two inches and a half long; the descending colon, the sigmoid flexure, and the rectum distended, but normal with the exception of a partial annular contraction at the sigmoid flexure; the small intestine very narrow; the ileum for a few inches before its junction with the cæcum much contracted; and the stomach having an hourglass-like contraction near the cardiac end. All the other organs were normal.

A Lipoma in the Pharyngo-laryngeal Space removed by Subhyoid Pharyngotomy.—Aplavin (*Arch. f. klin. Chir.*) reports the removal of a large, hard lipoma from the pharyngolaryngeal cavity by a modification of Langenbeck's operation of pharyngotomy. The longitudinal incision along the anterior border of the sterno-cleido-mastoid, added by Küster and Ivenson to the transverse incision of Langenbeck, Aplavin does not approve of, because by it both branches of the superior laryngeal nerve are divided. He therefore cuts directly upward from the transverse incision, and divides the greater cornu of the hyoid bone with pointed scissors, which is easily done without injury to the lingual artery and the superior laryngeal nerve.

After these incisions were made the larynx and the lower part of the wound sank down and the hyoid bone rose and was drawn backward, so that the field of operation came into easy view. Inspection was also facilitated by the fact that the larynx could be shifted from its normal position and placed obliquely, so that the entrance into the larynx, its cavity as far as the vocal bands, and the anterior wall of the pharynx were easily seen and of easy access. Through this opening he removed a polypoid growth as large as a hen's egg, attached by a broad base to the back part of the cricoid cartilage.

An Osteoplastic Operation for Spina Bifida.—Bosroff (*Ctrlbl. f. Chir.*, June 4, 1892) reports the following case: A boy, eight years old, had suffered from myelo-meningocele in the sacral region and from incontinence of urine and fæces since birth, and this operation was undertaken for his relief. A portion of the skin covering the tumor was removed, the whole of the sac was excised, and then the cleft in the bone, which corresponded to the third piece of the sacrum, was closed by a piece of bone taken from the crest of the right ilium, an inch and a quarter long, three fourths of an inch wide, and nearly half an inch thick. The bony margins of the vertebral cleft were cut away and the displaced portion of bone was sutured in its new position, the part covered with periosteum being directed toward the interior of the spinal canal, and the cut, spongy surface backward toward the external wound. A profuse discharge of cerebro-spinal fluid persisted for several days, but the patient made a good recovery. At the end of the second month the transplanted fragment of bone had consolidated with the sacrum. After three months the boy had complete control over the rectum and no longer had nocturnal incontinence of urine, but was still unable to restrain the flow of urine when he was in the erect posture.

Extirpation of the Larynx.—Wolff (*Berlin. klin. Woch.*, May 23, 1892) records the following case: A man, forty-one years old, had presented symptoms of a laryngeal neoplasm for two years, and, when he came under observation, was much emaciated and suffered with extreme dyspnœa. The larynx was nearly filled by the neoplasm. A preliminary tracheotomy was performed and Trendelenburg's tampon-cannula inserted. Then, with the head hanging well over, the larynx was cut open, and, as the growth occupied both sides, the entire larynx, including the epiglottis, was removed. The tracheotomy wound was then closed, the skin stitched around the trachea, and a tube introduced into the œsophagus. The patient made a good recovery.

Two months later a plastic operation was performed to close the wound in the pharynx, with such a satisfactory result that the patient could swallow both solids and liquids. An artificial larynx was afterward put in and the patient learned to speak through it quite satisfactorily.

Wolff attributes his success in this case to operating with the patient's head overhanging, to the small amount of blood lost, and to keeping the patient's head low and his neck raised during the after-treatment, in that the dangers of blood entering the air passages and of pneumonia are thus avoided.

The Radical Cure of Congenital Cervical Fistula.—Chalot (*Rev. de chir.*, May 10, 1892) reports the following case: A boy, seventeen years of age, had a congenital fistula on the right side of the neck with the external opening two centimetres and a half above the sterno-clavicular articulation. The internal opening was found just in front of the posterior pillar of the fauces, upon the surface of the tonsil, by means of a colored fluid injected into the external opening. The margins of the internal opening were freshened and the opening was closed by sutures. The lower part of the fistula was then exposed and dissected out from the external opening to the place where it came into relation with the carotid, above which point it was thoroughly scraped. The wound was then closed except at one point near the hyoid bone, where an opening for drainage was left. Primary union and a complete cure resulted. Several months later no sign of the fistula was visible.

Transplantation of an Eyelid.—The following curious case is reported by Douthwaite (*China Med. Miss. Jour.*, June, 1892): A Corean official had lost part of the lower eyelid, and prevailed upon a slave, for a consideration, to furnish his own eyelid for transplantation. Both men were chloroformed and the margin of the official's eyelid was prepared first by scraping and then making a deep slit along its whole length. The lower lid of the slave was then seized and its margin slit off in a wedge-like piece, which was quickly inserted into the slit prepared for it in the other eyelid and adjusted by means of fine sutures. It was then washed with a 1-to-1,000 bichloride solution and a pad of antiseptic lint was applied. On the second day the circulation was fully established in the transplanted tissue and the eyelid looked natural. On the third day everything was doing as well as could be desired, but that night, while half asleep, his eye feeling somewhat uncomfortable, the patient gave it a vigorous rubbing with his hand, which completely ruined the work that had been done. The writer believes that with the observation of greater care the operation would probably have proved successful.

Congenital Macroglossia.—In the same journal we find notes of the case of a girl, five years of age, whose father stated that at her birth her tongue was observed to be protruding a little beyond the lips, and that since then the increase had been gradual until within a few weeks, when it had assumed an enormous size. At that time she had "fever." She had been fed on slops, and of late had had difficulty in swallowing. She had never been able to articulate. Her tongue was greatly swollen, purplish, lolling out of the mouth, and hanging over the chin, with constant dribbling of saliva. The tongue measured three inches and a half from lips to tip, three inches from side to side at any point, and an inch and a half in thickness. It was very hard and dry, covered with horny epithelium from exposure. The lips were kept more or less in close contact over the tongue. Its lower surface was ulcerated from constant pressure against the teeth. The lower teeth and alveoli inclined forward. There was no pain except when the organ was moved, and that was due to the ulcer on its lower surface. There was no obstruction to respiration.

The tongue was first divided mesially with scissors, and each half was removed separately with the écraseur to the extent of four inches. The écraseur was screwed up slowly and steadily, so that the tissues were cut with but little hæmorrhage. The result was perfect recovery with, of course, marked improvement in the patient's appearance.

The Treatment of Fractures.—Helferich (*Münch med. Woch.; Ctrlbl. f. Chir.*, No. 25, 1892) protests against the immediate application of a plaster-of-Paris dressing to a recent fracture, because the healing of a fracture with deformity can be prevented only by a perfect diagnosis in which the form of the fragments and their position, as well as the possibility of interposition of muscular tissue between them, must be considered in order to institute proper treatment. A fracture healing in a bad position must be corrected as early as possible, and one that has so healed must be corrected by osteoclasis or osteotomy with subsequent extension.

Extirpation of a Uterus and Falloppian Tube from a Hernia in a Man.—Bœckel (*Ann. de gynéc. et d'obstét.; Med. Chron.*, August, 1892) communicated an account of this case to the *Académie de médecine* on April 19th. A young man, twenty years of age, consulted him on account of a congenital hernia which was causing pain. On performing the operation for radical cure, the operator found the sac empty, but its posterior wall inclosed a triangular body, covered by peritonæum, which was at first taken for an intestinal diverticulum; but the inguinal canal was empty, and the organ in question had no connection with the alimentary canal. Pressure made on the abdomen below the ring caused a pearly-white oval body to present at the external inguinal aperture. Parallel to this and just above it was attached a fimbriated cystic body, which could be nothing but a Falloppian tube. These organs were removed *en masse*, and the operation was successfully completed. The parts removed consisted of three portions. There was first a two-horned womb, with a cavity lined by mucous membrane and ciliated epithelium. Secondly, there were a tube and a testicle with epididymis and vas deferens. Thirdly, there was a broad ligament connecting and inclosing these two organs.

This is said to be the only known instance of female genital organs being contained in the scrotum of a man otherwise normally developed and having all the characteristics of his sex.

The Operative Treatment of Congenital Dislocation of the Hip.—Lorenz (*Ctrlbl. f. Chir.*, No. 31, 1892) criticises Hoffa's contention that the pelvitrochanteric muscles form the chief hindrance to reduction in congenital dislocation of the hip. Hoffa's operation is as follows: The dislocated head of the femur is laid bare by Langenbeck's incision posteriorly for resection. The capsule is loosened subperiostally, together with the tendinous insertions into the trochanter major and trochanter minor, thus laying bare the upper end of the femur for as great a distance as possible below the trochanter minor. The head of the femur is then so mobile, according to Hoffa, that, by extreme flexion and adduction of the thigh, it can be moved so far from the ilium as to render the region of the acetabulum accessible, and give space for the attempt to make an artificial acetabulum, and then, by means of Paci's manœuvre for reposition, aided if necessary by subcutaneous tenotomy of the adductors, the muscles arising from the anterior superior spine, and the hamstring muscles, it may be placed in the artificial acetabulum.

Lorenz has tried this operation with not the best result, and his experience has led him to believe that the loosening of the insertions of the pelvitrochanteric muscles is wrong, as these muscles seemed to be lengthened rather than shortened when the head of the femur was dislocated. He has accordingly formulated another plan of operation, the essence of which is that the head of the femur is reduced to its proper place opposite the region of the acetabulum before the principal part of the operation, the formation of the acetabulum and definitive reposition, is attempted. The principal difficulty which has hitherto frustrated operations on older children should thus be overcome before the beginning of the operation proper. The reduction should be made possible by myotomy of the muscles from the tuber ischii and the anterior superior spine of the ilium and the adductors; the pelvitrochanteric muscles should remain intact; and the upper end of the femur should not be stripped bare, but the joint should be opened anteriorly in order to undertake the formation of an acetabulum. He reports concerning four patients thus operated on, one of whom was fifteen years old, five years over the limit of age usually assigned.

Miscellany.

The American Gynæcological Society will hold its seventeenth annual meeting in Brooklyn, in the chapel of the Polytechnic Institute, Livingston Street, on Tuesday, Wednesday, and Thursday, the 20th, 21st, and 22d inst., under the presidency of Dr. John Byrne, of Brooklyn. Besides the president's address and an address of welcome by Dr. Charles Jewett, the following titles are announced: Periodical Intermenstrual Pain, by Dr. Chauncey D. Palmer, of Cincinnati; Oxygen in the Treatment of Septicæmia, by Dr. Andrew F. Currier, of New York; Technique in Plastic Surgery of the Cervix Uteri, Vagina, and Perinæum, by Dr. William H. Wathen, of Louisville; Pyosalpinx, with Report of Cases, by Dr. Archibald McLaren, of St. Paul; Elective Cæsarean Section—Time of Operation, by Dr. Henry C. Coe, of New York; The Remarkable Results of Antiseptic Symphysiotomy, by Dr. Robert P. Harris, of Philadelphia; Cœliotomy after Labor, by Dr. William H. Parish, of Philadelphia; Stomatitis due to the Irritation of Epithelial Pearls in the Mouths of New-born Infants, by Dr. Henry J. Garrigues, of New York; Certain Aspects of Gonorrhœa in Women, by Dr. Charles P. Noble, of Philadelphia; Retroperitoneal Tuberculosis simulating Hernia, by Dr. Edward P. Davis, of Philadelphia; The Treatment of Post-partum Hæmorrhage, by Dr. Egbert H. Grandin, of New York; Supravaginal Hysterectomy for Uterine Fibroids: Report of Fourteen Cases, by Dr. William M. Polk, of New York; Supravaginal Hysterectomy, with Subperitoneal Treatment of the Stump without Ligature, in Operations for Uterine Fibromyomata, by Dr. B. F. Baer, of Philadelphia; Vaginal Hysterectomy for Cancer of the Uterus, by Dr. Hermann J. Boldt, of New York; In Memoriam—Dr. Gilman Kimball, by Dr. Francis H. Davenport, of Boston; Can we prevent Secondary Hæmorrhage after Ovariotomy? by Dr. Horace T. Hanks, of New York; The Experience of the Boston Lying-in Hospital in the last Five Years in the Treatment of Eclampsia, by Dr. Charles M. Green, of Boston; The Value of the Forceps in Complicated High Arrest of the Breech, with Report of Two Cases, by Dr. Edward Reynolds, of Boston; The Best Management of Occipito-posterior Cases, by Dr. Chauncey D. Palmer, of Cincinnati; Umbilical Hernia in the Female, with Report of Five Cases, by Dr. A. Palmer Dudley, of New York; Conservative Laparotomy, by Dr. William M. Polk, of New York; and The Ætiology of Intrapelvic Effusions of Blood, by Dr. Florian Krug, of New York.

The Dangers of Drinking-water.—News of typhoid fever in Dublin and the large number of typhoid attacks in the Riviera among the American and European travelers, attributed chiefly to polluted drinking-water, had hardly become familiar to the profession before it heard that strenuous efforts were being made to remove the evils of Chicago drinking-water, and more recently the reports about the dangers of the drinking-water which Paris takes from the River Seine have created alarm, in view of the choleraic disturbances. All of these circumstances have again directed attention to natural mineral waters of dietetic rather than medicinal character. These dietetic waters, more generally called "table waters," if pure, are of great value as hygienic agents. Travelers are those who are oftenest exposed to the dangers of the bad drinking-water which the majority of communities furnish. Therefore they should as much as possible confine themselves to the use of well-known and admittedly pure table waters, and this is quite practicable. There is at least one such, the Apollinaris, which can be found everywhere. Where such waters can not be obtained, the ordinary drinking-water, if the least suspicion attaches to it, should be boiled before using.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

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Original Communications.

A STUDY OF THE ARTEFACTS OF THE NERVOUS SYSTEM.

*The Topographical Alterations of the Gray and White Matters of the Spinal Cord caused by Autopsy Bruises, and a Consideration of Heterotopia of the Spinal Cord.**

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Introduction.

A knowledge of the artefacts of the central nervous system—that is, of the artificial changes produced during removal from the body and preparation for the microscope—is of a good deal of practical importance, because these changes are so very liable to be misunderstood or to be mistaken for developmental errors or for the results of disease processes.

The nervous system stands supreme over all the other organs and tissues in the high organization and extreme textural delicacy of its anatomical elements, and the complexity of their arrangements. This is why the nervous system is so much more susceptible to artificial changes, why the artefacts are so manifold and complex and deceptive in resembling ante-mortem changes in this tissue.

The firmer texture and comparative simplicity of structure of such organs as the lung or kidney permit them to endure rather rude treatment at the autopsy, without showing any extensive or perplexing artificial changes in their structures. But the nervous system demands a very different sort of treatment. The whole technique of removal and preparation for the microscope requires a much more refined and delicate procedure, and the utmost care to prevent the occurrence of artefacts. For instance, it does not seem to be appreciated that an apparently trifling compression of the fresh spinal cord, an accidental blow at the autopsy, or the mere careless handling of the organ, may produce changes in its complex and delicate elements and their intricate arrangement which under the microscope may suggest malformations or the results of disease processes and tempt the observer to postulate causal relationships of the artefacts to spinal-cord diseases in general, or to any particular disease which led to the removal of the cord.

As there are no works on artefacts of the nervous system, it is thought that these studies, dealing with them collectively and in detail, together with faithful drawings of their gross and microscopical appearances, may be useful as a reference paper to guard against the mistakes made about them which the literature is replete with.

A most fruitful cause of manifold artefacts in the *spinal cord* is the bruising of the organ during its removal at the autopsy. When the spinal cord is bruised—and this happens quite frequently at the autopsy—two sets of changes more or less intimately associated with each other are produced.

In the first place, the force of the blow or compression induces deformities of the gray and white matters. The two cord substances are thrust about into inappropriate places. Thus, the bruise produces (1) *topographical artefacts of the two cord substances.* Secondly, mechanical alterations in the structures of the individual elements of the gray and white substances are induced by bruises of the cord. So bruising the cord also produces (2) *minute structural artefacts in the two cord substances.*

It is with the first set of changes and the mistakes made about them that the present paper is largely concerned, while the second set of changes and other artefacts of the nervous system will be considered in a later paper.

The errors prevalent about these topographical artefacts due to bruising the cord are considerable and important. For the past ten or fifteen years observers have been describing these topographical changes in the white and gray matters of the cord, caused by autopsy bruises or manipulation, as congenital malformations, apparently without any thought of the possibility of their artificial nature, and have made it appear that the alleged malformations occur quite frequently and induce a condition in the cord predisposing to disease. It is true that these topographical artefacts are very deceptive and do simulate malformations, and are readily produced unawares at the autopsy, but they have characteristic appearances, and can be easily traced to bruising, for a number of features plainly indicate the action of mechanical forces. Furthermore, observers should have been warned against regarding these artefacts as malformations from the fact that no peculiar symptoms or defects were ever associated with them in any of the cases.

As the subject stands to-day, some twenty-five cases of congenital malformations of the spinal cord (excluding monstrosities) are recorded in the literature, and, as a matter of fact, these cases are nothing but commonplace bruises of the fresh cord. These cases do harm by the cumulative and unchallenged, though plausible, mistakes which they perpetuate about the frequency of spinal-cord malformations and their supposed bearing on spinal-cord diseases.

On the other hand, it must be made clear that there are genuine cases of spinal-cord malformations of real developmental origin; but these are found very rarely indeed. In all, thirty-one cases of alleged spinal-cord malformations (excluding monstrosities) are recorded. *Six* of these are genuine cases. The remaining *twenty-five*, as just explained, are due to bruises or disease, or both.

Now, all of these malformations, the true and the false cases, in the adult cord are grouped together under the term heterotopia. Heterotopia (from ἕτερος, another, and τόπος, a place) means a congenital displacement of the white or gray matter. There may be a misplaced portion of the white matter, and this may be called heterotopia of the white matter. In like manner the occurrence of gray matter in inappropriate places is called heterotopia of the gray matter. The occurrence of extra portions of gray matter or fragments lying in the midst of the white matter, separated

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* Presented at the New York Neurological Society, June 8, 1892.

from or attached to the gray horns, is also included under the term. The term heterotopia is also applied to deformed contours of the gray matter. The word at present is used rather loosely and broadly to cover any degree of malposition of the two cord substances, from a separation of a tiny bit of gray matter from the parent-mass up to duplication of the cord. Doubling of the cord is generally referred to as simply "duplication of the spinal cord" (*Doppelbildung*), and inequality in the volume of the gray segments is often designated as "asymmetry." (Heterotopia has also been used in much the same sense to designate little extra protuberant masses of gray matter on the surfaces of the brain cortex.) The term was first used by R. Virchow to designate misplaced fragments of gray matter in the white substance of the cerebral hemispheres.

Heterotopia of the spinal cord was first described by Arnold Pick in 1878. This was a genuine case, as were three others described by the same author in 1881. Hans Virchow mentioned a genuine instance in 1887. Thus the only genuine cases of heterotopia (excepting Virchow's case) were about the first cases published.

After these follow the erroneous cases of heterotopia due to artefacts or disease, or both. Kahler and Pick (?) in 1879, Schultze, Drummond (in England) in 1881, Fürstner and Zacher in 1882, Bramwell in 1885, and Schiefferdecker in 1887, all describe erroneous cases of spinal-cord malformations.

At this time the subject received a fresh impetus from Kronthal, who in 1890 described a congenital malformation in the spinal cord of an ox (which had been badly mangled in a butcher's store), and in 1888 recorded malformations of a cord in acute myelitis. This disease of course tends to produce secondary deformities of the gray matter, and renders the cord so soft and pulpy that the slightest manipulation causes changes in the contours and positions of the cord substances, particularly the gray matter. Kronthal's papers, which sum up the preceding cases, present statistics, and discuss the "neuropathic disposition" thought to be induced by these bruise-artefacts, were followed by quite a number of cases which extend up to the present time.

Buchholz, 1889–'90, Brasch, Jacobssohn, Feist, Turner and Campbell, and Tooth in 1891, Feist in 1892, and others describe cases of bruises as various malformations, generally under the term heterotopia, and among them two more cases associated with acute myelitis. It is surprising that such a formidable literature as this has arisen from so simple and obvious an error without any question as to the true origin of the changes.

Seguin's case, reported by Delafield in 1872, is described very conservatively, and no conclusions are presented about its nature. Drummond is also very guarded about his case. He does not speak of it as a malformation, and seems to be the only one of these writers who had in mind the possible element of artefacts, for he states that the changes might have been due to manipulation, although he believed otherwise.

One or two rather far-reaching deductions have been made from these erroneous cases of heterotopia. One of these, the discussion of the embryological side of the evolution of these supposed malformations, does not of course invite any serious attention. But the correction of another question, of the association of the neuropathic disposition with these erroneous cases, seems to me to be of fundamental importance. Even so competent an observer as F. Schultze (and before him Kahler and Pick, but their case is very much less open to criticism) discussed at length these artificial disfigurations as an underlying basis for the neuropathic disposition. His idea was that these supposed malformations weakened the resistance of the cord against disease so as to invite the invasion of pathological processes. This association of the induction of disease with these artefacts has been reiterated from one writer to another, so that heterotopia of the cord is quite intimately associated in the literature with the neuropathic disposition. The fact is that cords the seats of actual lesions were bruised in their removal, and, under the influence of a false impression perpetuated from writer to writer, the effects of the bruising were unquestionably considered as a predisposing factor in the induction of diseases of the spinal cord.

The purpose of this paper, then, is a description of the topographical artefacts of the two cord substances incident to autopsy bruises or other manipulation, a criticism of the literature of malformations (excluding those from monsters) or heterotopia of the spinal cord, and an attempt to look at the association of the neuropathic disposition with spinal-cord malformations in its proper light.

The paper has been arranged in the following way:

Section I. A consideration of malformations of the spinal cord in general.

Section II. An analysis of the published cases of true heterotopia of the spinal cord and medulla oblongata. 1. The true cases of heterotopia of the gray matter. 2. The true cases of heterotopia of the white matter.

Section III. The methods of removing the spinal cord at autopsies and their relation to the production of artificial malformations by bruises.

Section IV. Description of the appearances of non-intentional bruises of the cord selected from ordinary routine autopsies.

Section V. A description of the results of experimental bruising of the human spinal cord. 1. Gross appearances of the bruised cords. 2. Microscopical appearances of the same. 3. Artificial duplication of the spinal cord. 4. The minute structural changes due to bruises of the spinal cord.

Section VI. An analysis of the erroneous cases of spinal-cord malformations produced by manipulation or disease, or by both combined.

Section VII. The diagnosis of spinal-cord bruises in sections, and certain general remarks.

Section I.

A CONSIDERATION OF MALFORMATIONS OF THE SPINAL CORD IN GENERAL.

Before entering into the details of the subject it will be well to consider very briefly malformations of the spinal cord in general, to see how the heterotopic condition is related to them, for the condition does really exist independent of the results of disease or manipulation.

The malformations of the spinal cord may be conveniently classed as follows:

I. CONGENITAL DEFORMITIES ASSOCIATED WITH MONSTROSITIES, AND INCOMPATIBLE WITH EXTRA-UTERINE LIFE.

These may be divided into—

1. *Amyelia*, or absence of the spinal cord. This is almost invariably associated with absence of the brain.

2. *Atelomyelia*, or partial development of the spinal cord. This is often seen in the anencephalous or acephalic monsters, where, corresponding to the incompletely developed brain, there may be various degrees of defective development of the cord as to its length; the upper portion, varying from one or two of the uppermost cervical segments to the middle dorsal region, or more, may be absent.

3. *Diastematomyelia*, a condition in which a portion or the whole of the cord is split into two lateral halves. Each half of the cord, being enveloped in its own membranes and giving rise to its own nerve roots, may fuse together to form a single cord at some region. (It is very likely that some of these cases have been confounded with an extensive degree of development of hydrorrhachis interna.)

4. *Diplomyelia*, or a formation of two spinal cords—a duplication of the spinal cord. This happens in the various kinds of double monsters.

This group of cord deformities is of no practical importance, and is only instanced here to lead up to the proper classification of heterotopia. Detailed instances of all of these grosser malformations may be found in Guerin's (1) work and the various books on teratology.

II. MINOR CONGENITAL MALFORMATIONS NOT INCONSISTENT WITH THE MAINTENANCE OF LIFE.

These may or may not be recognizable during life, and may be subdivided as follows:

1. *Hydrorrhachis interna*, or *hydrómyelia*, a defective closure or arrangement of the divisions of the primary fœtal central canal.

This condition may be accidentally found after death. Its presence may also be indicated by the subsequent development of syringomyelia, or by its association with spina bifida, the varieties of which are well summarized in Bland Sutton's work on *Comparative Pathology*.

Under this subdivision the condition known as *hydrorrhachis externa* may be conveniently alluded to, which consists in an abnormal congenital accumulation of fluids between the meninges of the cord, causing more or less diminution in the volume of the latter.

2. Heterotopia, or misplacement of the substances of the cord.

(*a*) *There may be misplaced portions of the gray matter.* Minute bits of gray matter or of the gelatinous substance of Rolando may develop in the white columns of the cord. These may be isolated or partially connected with the gray horns by slender gray filaments.

(*b*) *Portions of the white matter may be arranged in an unusual manner.* This malposition of bundles of white matter, or the passage of bundles of nerve fibers through unusual channels to reach their prescribed destinations, is almost exclusively observed, as would be expected, in the isthmus, where the arrangement of the white matter nearly reaches its highest complexity.

Such heterotopic conditions, however, are not indicated during life.

3. *Anomalies of the Spinal Nerve Roots.*—These are not extensive and are most marked, as a rule, in the anterior roots, where they are not infrequent. In these cases, probably, the fibers of the roots are not defective in number but are only arranged in an unusual manner.

4. *Asymmetries of the Spinal Cord.*—Possibly some of these cases are congenital in origin to a slight extent, but it would seem that to a greater extent they are acquired during life. They will consequently be discussed under the succeeding title.

III. MALFORMATIONS OF THE SPINAL CORD ACQUIRED DURING EXTRA-UTERINE LIFE, OR SECONDARY TO DEFECTIVE DEVELOPMENT OF OTHER PARTS OF THE BODY.

These are not, properly speaking, malformations. They are produced by known pathological processes in well-developed cords and are distinct from the instances in Groups I and II. This group is not clearly defined from the congenital malformations, so that some space may be taken for their consideration as a class.

These acquired distortions of the substances of the cord may be roughly divided for our purposes into—

1. *Distortions which regularly follow some of the cord lesions.*

2. *Asymmetrical conditions of the cord due to arrested development of the cord after birth, or secondary atrophy of portions of the cord corresponding to defective development or absence of some part of the body elsewhere.*

1. The substances of the cord, especially the gray, may be distorted or misplaced by several of the spinal diseases. It would seem unnecessary to speak of this, but these distortions, the result of certain cord diseases, have been mistaken for congenital malformations, and were supposed not only to have existed prior to the onset of the disease, but also to invite its occurrence. Acute destructive myelitis has a tendency to displace or distort the gray matter, and this condition may be made still further grotesque by handling the cord at the autopsy.

Chronic myelitis, compression myelitis, poliomyelitis anterior, tumors and cavities, may all induce distortions or asymmetrical conditions of the substances of the cord, which may be enhanced by careless manipulation at the autopsy, and should not be confounded with congenital malformations.

2. *Asymmetries of the cord with congenital defects of the extremities or muscles.*

These acquired asymmetries are not clearly enough separated from the congenital malformations of the cord. There seems indeed to be a tendency to look at them as arising from defective development of groups of ganglion cells, whereas the asymmetry arises from the gradual post-natal atrophy and lack of further development of the group of ganglion cells corresponding to the defective member. They should be regarded as due to an arrest of development at birth rather than to a failure of development.

In cases of intra-uterine amputations which have lived a number of years, the corresponding portion of the cord is asymmetrical. The gray and white matter, particularly the former, is shrunken on the corresponding half of the cord.

What occurs in the motor part of the cord in a case of intra-uterine amputation seems to be somewhat as follows: The ganglion groups of the absent limb develop equally with the surrounding groups up to near the time of birth; they send out their neural processes in company with the other cells which become nerves destined for the absent member. After birth their development is retarded from disuse, and in the course of years they disappear and cause a shrinkage of the gray horn. In like way the nerve fibers atrophy in the nerve roots.

Examination of such cases have been made by Edinger (2) and Davida (3).

A similar but much more slightly marked asymmetry of the cord is found a number of years after *ordinary surgical amputations.*

Cases of *congenital club-foot* have been described with slight asymmetry in the adult cord, due to a trifling shrinkage of the anterior horn on the corresponding side. Although any discussion as to the peripheral or central origin of club-foot is foreign to this paper, the writer believes in the former view, and that the resulting secondary changes in the cord take place in the same way as in intra-uterine amputations, only that they are of a corresponding lighter degree of intensity. The condition of the spinal cord in club-foot is described by Ross (4), Marchand (5), Dejerine (6), and Cogne and Troisier (7).

Congenital absences of voluntary muscles, or other defective developments of the extremities, would produce similar slight asymmetries in the adult cord.

An asymmetry of the gray matter above or below a tumor of the cord may result from the enlargement of one of the horns due to an additional amount of gray matter forced upward or downward by pressure from the tumor. A good example of this is reported by Adamkiewicz (8).

Perhaps a congenital defect in the cord itself has been too sharply excluded in these asymmetries associated with club-foot, intra-uterine amputations, and the like, but I am disposed to think in these cases that the cord is very nearly normal near the time of birth, and that the cord changes take place in later years of life by atrophy of ganglion groups from arrest of their further development.

Serres (9) found in two embryos without lower extremities an absence of the lumbar enlargement, an observation which would tend to militate against the view expressed above; but as he examined the embryos at a period of development before the enlargements appear, the observation has not much value.

Tiedemann (10) examined a case of congenital absence of all four extremities a few days after birth, and found the enlargements of the cord very defective and that the cord had but half its usual volume in these regions. The case was not examined microscopically and the condition of the gray matter is not stated. As many of the fibers conveying centripetal impressions to the cord develop in the periphery and grow inward to the cord, the cutting off of the large supply from all four limbs ought to contribute materially to the reduction of the volume of the enlargements. Troisier (11) describes a case in which a congenital absence of the left hand and neighboring part of the forearm was associated with an asymmetrical condition of the cord in the lowermost cervical region in a child dying six months after delivery at the end of the eighth month. The author excluded intra-uterine amputation, and believed that the absent member was due to a simple arrest of development. The changes in the cord (shrinkage of the anterior horn and white matter on the left side in the lower cervical region) seem entirely secondary and indicate atrophy consecutive to the absent member. In Pick's (12) masterful article on Agenesis of the Spinal Cord a case is recorded in which the spinal cord of a pig, having one congenitally defective extremity, examined six months after birth showed an asymmetrical condition of both the gray and white matters, in the corresponding enlargement of the cord, similar to Troisier's case (Troisier's case is discussed by Pick (12) and Leyden (13)).

3. *Variations in the Volume of the Cord as a Whole.*—Variations as to the length, thickness, position in the vertebral column, and configuration of the external furrows and fissures occur, apparently dependent upon the variations in the physical development of different individuals.

Observations of the measurements of the segments and intersegments, the number of entrance funiculi of the nerve roots and their anastomoses, show variations which will be described in a future paper. Any one who has examined the human cord extensively will have noticed these volumetric variations, but we have not yet observations enough to explain them very well.

A review of a number of personal autopsies would tend to show that the cord is liable to become flattened, with prominence of the external furrows, especially in the dorsal region, in old persons.

After this cursory consideration of spinal-cord malformations in general, a paragraph will be devoted to the frequency of heterotopia before going on with the details of the subject.

As a matter of fact, true heterotopia of the spinal cord, as already stated, is exceedingly rare. Pick, in 1878 and 1881, has published four instances, the only genuine cases of heterotopia of the gray matter, and two cases of heterotopia of the white matter in the medulla, or abnormal nerve-fiber bundles, have been described by Pick and by Cramer in 1890. These six cases are the only true examples I can find of heterotopia of the cord or medulla in the literature. Besides these, two personal cases of true congenital heterotopia—one of the gray matter and one of the white—will be described later. The other cases in the literature of the subject are not true cases of heterotopia.

Even on *a priori* grounds, without any analysis of the cases or experimental work, we should not expect any such bizarre distortions as are described in some twenty-five cases to exist preformed in a normally formed individual without some index of their presence. Localization is too rigid, and the two substances of the cord are altogether too delicately and constantly arranged with reference to each other, for us to believe that any considerable distortions of the gray and white matter may exist without some deformity elsewhere, or some other clew to the cord changes.

On the other hand, it is plausible enough that small bits of the gelatinous substance of Rolando might be here and there displaced in the developing cord, and persist in the adult without recognition, or that a tiny lump of the more highly organized gray matter containing ganglion cells might be partially separated from the parent horn by a few intervening vertical nerve fibers of the white columns, and yet go on performing its functions. But should the grosser malpositions of the gray matter, or the larger portions of extra gray matter, or the partial doubling of the cord, occur in its development, these malposed or extra portions of the cord would dwindle away in later life from functional inactivity, unless associated with some corresponding peripheral condition. The little clusters of ganglion cells found in a section straying out into the white matter on the confines of the gray matter in animals, such as oxen and horses, and occasionally in the human cord, can hardly be called heterotopia.

We wish to show eventually that, excepting the cases of Pick, Virchow, and Cramer, the great majority of the cases are simply dispersions of the substances of the cord by bruising done in its removal at the autopsy.

Section II.

AN ANALYSIS OF THE PUBLISHED CASES OF TRUE HETEROTOPIA OF THE SPINAL CORD AND MEDULLA OBLONGATA.

I. The true cases of heterotopia of the gray matter.
II. The true cases of heterotopia of the white matter.

Analysis of the Published Cases of Heterotopia of the Spinal Cord.

Of the thirty-one cases of malformations or of heterotopia of the spinal cord, the only genuine cases are the following six cases. Four of them are malformations of the gray matter of the spinal cord, and two are malformations of the white columns in the medulla oblongata. To each of these is added a personal case. Malformations associated with monstrosities are of course excluded from this group of cases.

The case of Virchow is more properly an instance of asymmetry rather than heterotopia, but it is most conveniently instanced in this section.

1. *The True Cases of Heterotopia of the Gray Matter of the Spinal Cord.*

Pick's (5) *Cases, No. 1, 1878.*—The cord was taken from a well-formed man dying with progressive muscular atrophy. In the course of the microscopic examination of the cord a minute lump of gray matter only one millimetre in diameter was found misplaced in the posterior white columns of the lumbar region. (See Fig. 1, tracing of the original plate.) The mass was so small that only a few sections could be cut of it, and, as the sections passed through it, the misplaced lump became smaller, and finally ended in the neuroglia strands of the posterior columns. This was the only heterotopic mass in the whole cord. It contained nuclei, and had the structure of the gelatinous substance of Rolando.

This tiny heterotopic mass was sharply outlined and sent out one or two branching processes of its substance which became continuous with the neighboring glia strands. Medullated nerve fibers passed through it (apparently the fibers of the internal division of the posterior roots, as the mass stood directly in their path). Finely medullated nerves also passed through the mass vertically. The author, knowing that the mass might have been produced by pathological processes, carefully excludes sclerosis, tubercle, and any form of tumor.

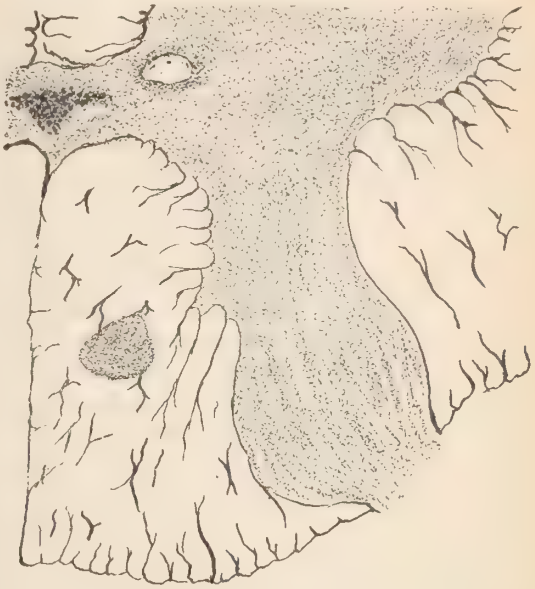

FIG. 1.—Pick's case of heterotopia of the spinal cord. The shaded circular area in the posterior column indicates the heterotopic fragment of gray matter.

This case of Pick is a genuine instance of heterotopia. The white matter of the cord at the level of the heterotopic mass is perfectly normal; it shows none of the appearances of crushing or bruising, which will be seen later almost always accompanying artificial displacements of the gray matter. There is but this single isolated fragment of gelatinous substance misplaced during the development of the cord.

Second Case of Pick, 1881 (15).—The second case of Pick relates to a fifteen-year-old boy having but the intelligence of a child. There was nothing notable about the motility or sensibility of the extremities of this idiot, or about their development, except that he was left-handed. There was considerable scoliosis of the vertebral column, and the brain was hemi-atrophic, while the cord seemed normal grossly. The latter was examined microscopically, however, and at the junction of the dorsal and lumbar cords a minute misplaced mass of gelatinous substance of Rolando, containing ganglion cells, was found in the right posterior white column. In places the misplaced mass joined the posterior horn by extensions or processes of gray matter. The mass was so small that only twenty sections could be cut through it.

It is unfortunate that the description of the other structures of the cord at the level of the misplaced mass, especially the surrounding white fibers, is not more elaborate and accompanied by drawings so that bruising of the cord could be positively eliminated; but I gather from the description that the appearances were very much like those in the first case (see Fig. 1), and that the case is an authentic one of heterotopia of the gray matter.

Third Case of Pick, 1881 (15).—The third case was taken from a woman aged twenty-nine, who had attacks of unconsciousness lasting half an hour with tremors in the arms. The patient's hands and feet became paralyzed, which persisted until death.

Microscopical examination of the spinal cord showed the presence of vacuoles in the ganglion cells—explaining the paralyses. There was no myelitis or other lesion of the cord. Misplaced fragments of gray matter—gelatinous substance—were found in both the lumbar and cervical regions. In the lumbar cord there were two symmetrically (?) misplaced bits of gelatinous substance at the same level, in the front part of the posterior white columns on either side of the posterior sæptum. One of the displaced masses was nearer the posterior horn than the other, and was attached to the same by narrower and broader bands of gelatinous substance. For the most part this latter mass had a rounded form, but in some sections it was more or less stretched out. Altogether, these two little masses were just like the displaced mass in the preceding case in character and position, except in the absence of ganglion cells.

Two other masses of the same structure and also nearly symmetrically situated at the same level were found in the posterior white columns of the cervical region, about where the internal division (?) of the posterior root fibers enter the posterior horn.

This third case of Pick is also one of true heterotopia, but it would be still more acceptable if drawings were present and if the description was not so limited to the misplaced masses, and was more complete about the condition of the other parts of the cord in the same region, which is so necessary in discriminating between true heterotopia and artificial distentions of the gray matter. A glance at Figs. 14 and 15 will explain just what is meant in this connection. Both of these plates show mere bruises of the cord, yet if the description were limited to the displaced mass entirely and omitted the condition of the surrounding tissues, the impression would be strongly conveyed that the case was one of true heterotopia.

Fourth Case of Pick, 1881 (15).—This case came from a girl, seventeen years old, with paraplegia from compression of the cord from osteitis of the thoracic vertebræ. There were also spinal pachymeningitis, tuberculosis of the brain, and myelitis of the middle dorsal region. A heterotopic fragment of gray matter was found of the same description as in the second case.

Virchow's Case, 1887.—Hans Virchow (9) describes an asymmetrical condition of the cord in a case of congenital hydrocephalus internus with microcephalia. In the fifth dorsal segment the right posterior horn was displaced laterally so that the exit of the horn at the periphery of the cord was situated about twice as far outward from the sæptum posterius as in the case of the left posterior horn exit, which was normally situated.

This asymmetry could have been produced artificially so easily (see notes on the hardening and removal of the cord in Chapter III) that I am not at all positively convinced that the displacement was a preformed condition of congenital origin. It would seem so, however, for the author does not note any of the other changes in the cord tissues indicative of bruising or faulty manipulation, nor are there any appearances in the plate illustrating the displaced horn characteristic of an artificial origin.

The Writer's Case.—The condition was discovered accidentally in the course of an examination of the nervous system in a case of myxœdema. The heterotopic fragment—but half a millimetre in diameter—was composed of gelatinous substance containing a few nuclei, but no ganglion cells or nerve fibers. *It was situated just posterior and external to the lateral angle of the nucleus cuneus.*

The surrounding white and gray substances were everywhere normal, and there were no evidences of bruising. The displaced mass looked more like an extra portion of gelatinous substance than a detached portion of the nucleus. This was the only instance of displacement in the cord or medulla, which were perfectly normal and exhaustively examined. The case is very briefly alluded to by Hun and Prudden, Myxœdema, *American Journal of the Medical Sciences*, July and August, 1888. This is the only instance of the condition ever seen by the writer among one hundred or more cords examined microscopically.

2. *The True Cases of Heterotopia of the White Matter in the Medulla Oblongata.*

I can find no instances of congenitally misplaced white matter in the spinal cord, but two cases of abnormal bundles in the medulla oblongata are reported, which will be supplemented by a personal case of the same.

Pick's Case, 1890 (17) (*illustrated*).—In a hundred medullas examined by Pick, one was found containing a sharply defined abnormal bundle of nerve fibers. The bundle appeared on one side only, and, taking its origin in the remains of the lateral column at the level of the upper part of the motor decussation, it passed inward and in front of the gelatinous substance of the posterior horn, and finally joined the corpus restiforme in the upper portion of the medulla without connecting with any nucleus or set of fibers on its way up.

Pick is careful not to confuse the abnormal bundle with the solitary fasciculus, and very aptly considers the misplaced bundle as part of the connection between some of the lateral white column fibers and the corpus restiforme. The writer cites Henle's allusion to a very similar bundle in his *Handbook of Anatomy*. Henle was evidently not perfectly clear about the abnormal bundle, for in the second edition of the work he calls it the respiratory fasciculus.

Cramer's Case, 1890 (18) (*illustrated*).—Cramer accidentally found in the course of an examination of a medulla from a case of cerebellar hemiatrophy a compact misplaced bundle of nerve fibers very much the counterpart of Pick's abnormal bundle. The abnormal bundle seemed to originate in the remains of the lateral column of the cord, and, as it passed inward and forward of the Rolandic substance of the posterior horn, it gathered in some of the skeins of fibers of the lateral column remains.

The bundle reached its greatest development at the sensory decussation, and in the midolivary region it was situated just ventrad of the solitary fasciculus, in the path of the recurrent vagus strands, in which position the bundle was split into two component columns. In passing up higher in the medulla, the bundle gradually disappeared by dividing up into fine bundles which tended to pass toward the corpus restiforme. The solitary fascicles were well formed in this case, and the writer thinks the bundle conveyed fibers from the lateral column to the corpus restiforme, which always derives some of its fibers from that column.*

The Writer's Case.—This case may be very briefly described. The abnormity was found in the medulla of an old tabetic, and consisted in a malposition of the left respiratory fasciculus. The upper portion of the fasciculus deviated from its usual position by being placed lateral and slightly ventral. It was quite close to the corpus restiforme. Besides this, the fasciculus, maintaining misplaced lateral position, as it passed downward could be traced to a much lower level as a compact bundle than its fellow.

SECTION III.

A CONSIDERATION OF THE METHODS OF REMOVING THE CORD AT AUTOPSIES, AND THEIR RELATION TO THE PRODUCTION OF ARTIFICIAL MALFORMATIONS BY BRUISES.

It is not easy to remove the adult human spinal cord by any of the practiced methods without using a considerable amount of force, which is difficult to control perfectly so as not to injure the cord itself. The spinal cord is quite universally removed by the median dorsal incision over the spinous processes, and, after exposure of the laminæ, these are sawed through with either a single-bladed or a double-bladed saw. After this a hook is inserted under the laminæ, or a spinous process is seized with a strong forceps, such as the lion-toothed kind, and the connected posterior archway of the vertebral column torn off with a sudden jerk.

If all the laminæ have been sawed through completely, the cord lying in the dural sac is exposed without much liability of injury. The only danger of wounding the cord in this procedure is that the saw may slip through the laminæ with a sudden thrust and strike the tough dural sac, distributing the pressure to the cord without the operator's realizing it. If the saw does pass through into the vertebral canal, the operator can not tell whether it may wound the cord or not. The canal is spacious enough, so that the saw-point may enter and not touch the dura, or it may slip down alongside of the dura without doing any harm, or it may cut into the dura and cord, or bruise the latter more or less.

This paragraph may seem trivial, and it is true that the chances of wounding the cord, especially one of normal consistence, by the saw alone, in the hands of a fairly skillful operator, are very slight. But, in a cord of diminished consistence, a slight tap on the dura mater from the saw may produce extensive changes in the distribution of the softened cord substances, often without any external alterations, and the effects of the bruise will not be discovered until the cord is examined microscopically.

To avoid bruising the cord, it is so important to use the saw almost entirely in dividing the vertebral arches that a properly shaped instrument should be used. A slightly curved saw, or one gently rounded at the point, operates much better than the rather frequently used perfectly straight saw, which is awkward in the lumbar and cervical regions, because the point becomes impacted in these curved regions of the vertebral column. The double saw with adjustable blades has no especial advantages over the single-bladed instrument; the double saw, it is true, operates more rapidly over the prominent dorsal region, but it is liable to become impacted in the bony saw grooves in other regions, so that in dislodging it the operator has to use sudden, jerky, forcible thrusts, which may drive the blades through into the vertebral canal and injure the cord.

With the slightly curved saw the operator is less dependent upon the subsequent undesirable procedures with the chisel and osteotome than with the perfectly straight blade.

Thus, if the posterior vertebral archway is completely sawed through without using the chisel, the danger of bruising the cord is reduced to a minimum. The best way is to test the spinous processes one by one manually after finishing with the saw, and if they are all freely movable the loosened posterior archway may be torn away with the hook or forceps.

If any of the spinous processes are immobile, it is best to use the saw again rather than the chisel and mallet.

As a matter of fact, in practical autopsy work the laminæ are not often completely sawed through, as just described. In an emaciated subject, where the spinal column is superficial and readily reached, it is a comparatively easy thing to separate completely the vertebral archway with the saw alone; but in the more deeply placed vertebral column of fat or muscular subjects, especially in the lumbar region, more difficulty is encountered, and one or more of the vertebral arches are left incompletely divided, inviting the use of the chisel.

So in practical work some portion of the arches is generally incompletely separated from the vertebral bodies by the saw, and it is then customary to use the chisel and mallet; and this is the proceeding that bruises the cord and gives rise to the dispersions of the cord substances so universally mistaken for congenital malformations, or the results of pathological processes.

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* A third case of abnormal bundles of white fibers in the medulla, described by Kronthal (19), unfortunately escaped the writer's notice until the text reached the printer. In making serial sections of a medulla of a case of bulbar paralysis Kronthal found two abnormal circular bundles of fibers of limited vertical extent lying mesal of the hypoglossal nucleus, near the floor of the fourth ventricle. One of the bundles measured 240 μ and the other 160 μ. After thirteen sections had been cut the two bundles fused into one, which could not be traced any farther. (In examining a medulla of a case reported by Dr. Delavan—Further Investigations as to the Existence of a Cortical Motor Center for the Human Larynx, *New York Medical Journal*, June 22, 1889—the writer found two unusual bundles of fibers in the inner margins of the hypoglossal nuclei, which were regarded merely as some stray bundles of the posterior longitudinal fasciculus, or bundles of association fibers for the cells of the hypoglossal nuclei.)

After breaking through the incompletely sawed laminæ by blows from the mallet on the chisel fitted in the saw groove, the operator tears away as much as possible of the vertebral archway, and if some of the arches still remain unseparated, which is very likely to be the case, he may repeat the chisel-and-mallet procedure or use large or powerful bone-cutting shears.

These shears are of various kinds, but all of them have such thick jaws that their mere introduction into the vertebral canal may be compromising to the integrity of the cord, while the subsequent wrenching and twisting of the bones in the process of cutting menaces the cord still more seriously.

The chisel or other instruments may also be used as levers to pry up remaining laminæ, in which case the cord is liable to be bruised by the slipping of the instrument, or the sudden depression of the bone used as a fulcrum.

The most extensive bruises are, in my experience, made by the use of the chisel. Even if the chisel has shoulders to prevent it from passing directly into the spinal canal against the cord, it is liable to fracture the arches and drive down fragments of bone against the dura. The suddenness of the blow from the mallet or the hammer also conduces much to the intensity of the dispersion of the cord substances. We shall see later that quick, sharp blows tend rather to produce more grotesque alterations in the cord matters than more deliberate pressures. The intervention of the dura-matral covering between the force of the blow and the cord also modifies the effects of the blow. The adult human dura mater is so thick and tough that it is a very important factor in the production of the cord bruises. It is hardly ever cut through by the autopsy instruments, and thus the cord is bruised instead of being lacerated or incised.

In the smaller animals—such as cats, dogs, monkeys, etc.—the dura mater is much thinner and more delicate and seems to fit tighter about the cord, so that in these animals blows from sharp autopsy instruments tend rather to produce simple lacerations than bruises with complex dispersions of the cord substances. The more fragile construction of the vertebral column also requires less force in removing the cord. At the same time, moderately complex spinal bruise artefacts occur occasionally by the operation of the scissors or osteotomes, which are most convenient in these animals, but are hampered in their action by the small lumen of the spinal canal. The conditions relative of bruises of the cord in the smaller animals are quite similar to the cases of children or infants at term. The bony canal and the dura mater here also play a less important part in the production of bruise artefacts than in the adult. Blows in the autopsy procedures, in such cases, give results more like those struck with cutting instruments on the entirely naked cord described in the next section. Furthermore, the tunics of the cord itself, in very young persons or small animals, have such a delicate structure that they are not favorable for distributing sudden concentrated force so as to produce the more complex dispersions of the two cord substances.

Thus it may be said, in general, in removing the spinal cord in such cases, that it is more frequently simply cut or torn rather than bruised, and if the cord does become bruised from the deliberate pressure or pushing by the scissors or osteotome, the results are usually less complex than in adult cases.

On the other hand, in larger animals like horses or oxen, the cord is even more difficult to remove and the tendency toward complex bruise artefacts increases. The vertebral canal is stronger, the instruments have to be used more forcibly, and the thicker and tougher coverings of the cord also contribute their share in the production of the mechanical artefacts.

These detailed remarks about the occurrence of bruises of the cord in animals seem not inappropriate, for such spinal-cord bruises in animals have been described in the literature as congenital malformations without any reservation at all as to the artificial origin of the changes.

Besides this ordinarily practiced method of removing the cord, there is another way of removing it by peculiar cutting chisels devised by Brunetti, which do away with the time and trouble of using a saw. By this method, which, I believe, is practiced considerably in Vienna, and is used more or less in other places on the Continent, the cord is taken out through the abdominal opening by the removal of the vertebral bodies. The method is said to be very expeditious, and has the further advantage, valuable in certain limited or private autopsies, of doing away with the disfiguring dorsal incision of the other method.

The chisels for this method are about fifteen centimetres long and a centimetre and a half wide; the cutting end is flat, like an ordinary carpenter's chisel, while the opposite end is heavy and cylindrical. The cutting edge is V-shaped; one shorter arm of the V is a pointed rounded guard or shoulder, while the other longer arm is the beveled cutting edge of the chisel. There are two of these chisels—a right-handed and a left-handed one—and they are used in this fashion: The pointed guard is inserted in the vertebral canal between the pedicles on one side, with the cutting arm resting against the pedicles, so that the long axis of the chisel is parallel to the vertebral column. Then the pedicles are chopped through one by one on either side, according as the right or left chisel is used, by blows from the mallet. The chisel is directed so that the force of the blow is not directed inward toward the vertebral canal, but parallel to it.

These same chisels are also used in conjunction with the saw to sever the laminæ when the cord is taken out by the dorsal method.

I am unable to say much about the chances of damaging or bruising the cord by this method, never having used this new ventral method or the chisels which it requires, but I should think that the use of these chisels, either ventrally or dorsally, would be very liable to damage the cord and to bruise it very thoroughly.

To find out the effects of the use of these chisels on the cord, one of my colleagues, familiar with these new methods, removed a cord for me by these chisels. This cord did not show many signs of bruising in the fresh external appearances, but in the subsequent examination a good part of the cervical enlargement had been considerably bruised with the resulting bizarre dispersions and malpositions of the cord substances. It must be said that the operator, an expert pathologist, acted in the best of faith in removing the cord carefully, for the case was an interesting one of hydrophobia, requiring a medico-legal autopsy and microscopical examination.

In addition to the instruments already mentioned, one or two other rather obsolete weapons are supposed to be of service in removing the cord rapidly, by enabling the operator to dispense more or less completely with the saw. These are the chisels of Esquirol and Amussat. Esquirol's chisel is a doubled-bladed affair, with convex cutting edges, which are adjustable or composed of a single piece of steel. The chisel of Amussat is curved; the blade is set at an angel of 45° with the handle and the blow is struck in front of the blade, so that the instrument is a sort of hook and chisel combined. Neither of these antiquated tools, especially the former, should be used unless one wishes to study the effects of bruising the spinal cord.

Independent of the autopsy procedure, the topography of the cord substances may be disturbed by careless hardening or manipulation in dissecting the cord. In a late autopsy in very warm weather, when the consistence of the cord is diminished so that it is soft and pulpy, the mere handling of the cord after the autopsy preparatory to putting it in the hardening fluids has a tendency to interfere with the topographical relations of the cord substances. Pinching such a cord with the fingers, and feeling of it repeatedly to test its consistence, disturb more or less the arrangement of the cord tissues.

In separating the attachments of the dura mater and cord after the vertebral canal is opened, great care should be taken not to touch the cord with the hands at all. The cord should not be bent, twisted, or stretched too severely. Every time a cord of diminished consistence is touched or squeezed or tested with the fingers, a certain amount of damage is done, which, although not sufficient to produce the changes simulating malformations, may produce minute changes or modify pathological alterations so as to interfere very seriously with proper interpretation at the microscopical examination.

Some pathologists open the dura mater with scissors (which sometimes wound or cut the cord) and remove the cord, leaving the dura mater in the spinal canal. It is safer, however, to take the cord out with the dura and to use instruments almost entirely in the operation, such as small scissors, forceps, and scalpel. In this way any undue accidental force or traction is distributed over the whole length of the spinal cord by means of the dura, and the resulting damage to the cord reduced to a minimum. Of course, the cord is also liable to be bruised or show minute artefacts if carried about from the autopsy mixed up with the other fresh organs in a common receptacle.

When a soft cord is cut into segments transversely, the gray and white matters tend to well up out of the cut ends, especially the white matter. The latter will flow out at the periphery of the cut surface and turn over the pia-matral covering. In such a soft cord, when divided transversely, the slightest manual pressure thrusts out still more of the cord substances, and if the dura mater is attached they are also pushed out by the traction of the ligamentum dentatum, when the dura is pulled, folded, or twisted. These disarrangements of the cord matters, in places where the cord has welled out of the pia mater when cut or divided transversely, are quite frequent and fairly constant in their appearance; and, in passing, Figs. 5, 6, 8, and 9 may be referred to as showing the changes of this kind.

These remarks about the effect of handling the cord are still more applicable to cords which are the seat of myelitis or other lesions diminishing the consistence of the cord. In acute destructive myelitis the slightest touch, or the operation of dividing up the cord, pushes the cord matters about, especially the gray, into wrong places.

The treatment of the cord while hardening, especially if it is soft or pulpy, may tend to produce misplacements, and still more frequently asymmetries, of the cord matters. If the cord has a twisted position or is carelessly doubled up in the hardening fluid, or even if it presses by its own weight against the bottom of the hardening jar, there is also liability of producing these artificial displacements or asymmetries. The welling up of the tissues from cut surfaces of softened cords may be increased during the early stages of the hardening. The dura mater should not be hardened with the cord, as it shrinks or stiffens up a little in the hardening, and squeezes the cord a trifle by transmitting pressure to the filaments of the ligamentum denticulatum.

The best way to harden the cord perfectly is to remove the dura mater and make many transverse incisions, and then curl it up in a loose spiral, so that the cuts gape open, and lay it out flat on a wad of absorbent cotton in Müller's fluid. When very perfect symmetry of the gray horns is wanted, as for measurements, or in a case after amputation, I have found it best to hang the cord up vertically without the dura in long glass tubes, with just weight enough on the cauda equina to keep the cord straight. Very soft cords are treated in the same way.

Cords softened by myelitis are hung up in this way and are not incised at all in the damaged regions, but various proportions of alcohol, from five to fifteen parts, are added to a five-per-cent. solution of bichromate, which gives it a greater penetrating power and a more rapid action, to compensate for the absence of transverse incisions. After a week or two, ordinary bichromate solutions may be used. If softened myelitis cords are cut open the cord flows out, and they can not be transported from the autopsy room without damage, and it is impossible to keep the cord matters topographically intact in the hardening. But if hardened *en masse*, as just described, artificial malformations are obviated, although the preservation of structural details and the staining of the sections may be slightly imperfect. It is bad practice to harden the cord in the same jar with portions of other organs which may press on it.

General Remarks on the Production of Artificial Malformations of the Cord by Technical Methods.

As a matter of fact, it is very easy to bruise the spinal cord at the autopsy, and it is quite frequently done. In examining a laboratory collection of about seventy-five human spinal cords taken out for suspected lesions in ordinary routine autopsies, seven of these showed effects of bruising. On the other hand, a great deal of force and hammering with the chisel and the mallet (in opening the spinal canal) may not disturb the cord at all. It is all a matter of accident. If the chisel is used, the liability of bruising is greater, and the operator may not be aware of having damaged the cord. The dura is generally intact after a bruise, and does not indicate it. The cord may show no gross, or but trifling external changes, or it may be very much altered, as hereafter described.

At the autopsy the chisel and the shears do the greatest and almost exclusive damage to the cord, and the ordinary chisel used in the dorsal method of removal does the most harm, for the force of the blow is directly toward the cord. The most skillful operator (if he uses the chisel or osteotome) is liable to bruise the cord at any moment, and produce the attendant appearances suggesting congenital malformations, or the results of pathological processes.

The writer, even after much experience as to how these bruises occur, in hastening the cord removal with chisel or osteotome, has accidentally damaged the cord so as to interfere with the understanding of the lesions in the microscopical examination of valuable material.

Brunetti's chisels for the ventral removal of the cord are open to less objection than the ordinary one, for the direction of the blow is not against the cord, but alongside of it. However, it must require a very practiced operator to use this method without contusing the cord.

Even if not mistaken for congenital malformations, these bruises of the fresh or hardening cord interfere greatly with the appreciation of pathological processes, if they happen to be present in the contused part, during the microscopical examination. Both the distribution and structure of the lesions may be so much altered that the bruised part has to be discarded.

It will also be shown later that bruises of the normal cord may produce appearances simulating sclerotic patches or other spinal lesions, and, inasmuch as the whole subject is misunderstood, these have very likely been described or considered as due to pathological processes instead of the bruises.

When the bruised cord is examined microscopically, some time after the autopsy, by a different observer knowing nothing about the autopsy accidents, the disposition is natural enough, at first glance, to regard the changes as preformed malformations, and it is fair to suppose that some of the published cases have come about in this way.

After all that has been said, however, about the production of these bruises by technical methods, when looked at practically, although the minor contusions occur with tolerable frequency (once in seven to ten cases), the grosser distortions are very rarely produced. Instances of perfect doubling of the cord have been recorded but twice in the literature. These were most undoubtedly caused artificially. Partial cord duplication, caused by bruises, is described but two or three times.

The text-books on autopsy technique do not explain at all the extensive and deceptive artefacts due to cord bruises, and do not warn the reader forcibly enough about the operations which are liable to produce bruises of the cord. Orth (20) makes some very valuable general remarks about advising the operator to be very cautious about injuring the cord in any stage of its removal, but fails to enforce his suggestions by explaining the serious and complex results of these injuries, whether slight or severe.

Nauwerck (21), on the other hand, in a most recent work on the methods of performing autopsies, tends to ignore the danger of wounding the cord, and advocates the use of the chisel freely. He considers the instrument indispensable, and on page 10 indicates that it saves time to dispense with the saw altogether by breaking through the vertebral arches from beginning to end with an ordinary carpenter's chisel.

This is very bad advice indeed. The less the chisel or osteotome is used the better. If these instruments must be used, the most skillful operator should remember that, at some time or another, he is quite certain to bruise the cord, and produce misleading changes in both the topography of the gray and white matter, and in their minute structures.

This latter set of changes sometimes ruins the cord for subsequent examination, for if these artefacts, according to the present tendency, are not entirely mistaken for the features of pathological processes, it becomes exceedingly difficult to distinguish artefacts from lesions when both are mixed up together in the same section under the microscope.

In removing the cords of infants, new-born children, or small animals with fragile or partly cartilaginous vertebral arches, skillfully used slender-bladed scissors or osteotomes are better than the ordinary saw.

In the fœtus, the whole technique of removing and hardening the very easily damaged cord requires a still more delicate and cautious treatment. It is often better in such cases not to attempt to remove the cord at all, but to harden it *in situ* by cutting out the vertebral column entire. Then small openings should be made here and there in the arches, or the cord with the vertebral column should be cut into segments, to permit the hardening media to penetrate thoroughly.

(To be continued.)

The Society of German Naturalists and Physicians.—According to the *British Medical Journal*, the meeting which was to have been held at Nuremberg from September 12th to 16th has been postponed till next year in consequence of the outbreak of cholera in various parts of Germany. The proposed meetings of the German Public Health Association at Würzburg and of the Prussian Medical Officers' Association at Berlin have also been put off for the same reason.

CONTRIBUTIONS FROM THE SURGICAL SERVICE OF ST. MARY'S FREE HOSPITAL FOR CHILDREN.

By CHARLES T. POORE, A.M., M.D.,
SURGEON TO THE HOSPITAL.

V.

OPERATIONS FOR EMPYEMA.

Case I.—E. H., aged four years, admitted July 5, 1877. Is said to have had pneumonia seven weeks ago. The patient is thin; there is absolute dullness on left side of chest; a long dorsal curve to right; some fever.

July 8th.—Chest aspirated.

22d.—Chest refilled, again aspirated, and sixteen ounces of pus removed.

30th.—Refilled again. Drainage-tube put into chest.

October 13th.—Discharged cured to-day; lung fully expanded.

June 10, 1878.—Was seen to-day; is perfectly well; lung fully expanded.

Case II.—B. McI., aged three years and a half, admitted February 14, 1881. Had scarlet fever in July, 1880, and has not been well since. Had a seton passed through left side of chest in September, 1880. Is thin and losing flesh.

There are found two openings on left side of chest—one in axillary line at the sixth intercostal space; the other at the eighth, through which a seton has been passed. Whenever patient cries, fœtid pus wells up from the upper opening.

February 16th.—Seton removed, and a drainage-tube passed from upper to lower opening. About three ounces of fœtid pus escaped. Cavity syringed out.

October 3d.—Patient began to improve immediately after the operation. The wound has long been closed. Has been down at sea-side all summer, and is to-day discharged cured.

1885.—Patient was at the hospital and is perfectly well, and has been so since his discharge. Lung expanded.

Case III.—M. B., aged twenty-two months, admitted March 31, 1884, with trouble on left side of chest. No history can be obtained.

July 17th.—Transferred to surgical division. Temperature has been high in the afternoon for some time. Aspirated, and twenty-one ounces of sweet pus removed. Temperature normal after operation.

20th.—Aspirated again, and sixteen ounces removed.

August 26th.—Ether, and drainage-tube put into chest.

September 17th.—Discharge has gradually diminished until now there is scarcely any. Drainage-tube removed.

November 11th.—Has done well, except that sinus in chest has not closed. For the past few days the temperature has been elevated (104°), and there has been a reaccumulation of pus in the chest. Drainage replaced.

December 9th.—Discharge diminished at once, but on any attempt to do away with drainage-tube there has been a reaccumulation and the temperature has gone up.

January 4, 1886.—Patient's general condition has remained good, and as long as the drainage-tube has been kept in there has been no accumulation in the chest, but, on its removal, the temperature goes up and she loses ground.

To-day three or four inches of the fifth, sixth, seventh, and eighth ribs are removed. The lung is fairly expanded, but there is a cavity between the visceral and parietal layers of the pleura; the latter is greatly thickened and covered with granulations. The flap raised to remove the ribs is replaced, and drainage-tube inserted.

The discharge never ceased, and the patient died of amyloid degeneration.

Case IV.—F. B., aged six years, admitted January 7, 1886, with pus on left side of chest following, it is said, a pneumonia.

February 19th.—Ether. Chest opened, and a portion of two ribs excised for drainage. Temperature before the operation ran from 99° to 101°.

March 7th.—Since operation, temperature has varied from 98° to 99°.

18th.—Patient to-day discharged cured.

March 12, 1892.—Examined. Lung fully expanded; no curvature; is in perfect health.

Case V.—F. J., aged four years. Admitted June 15, 1888, with empyema on left side. He had pneumonia, and had been sick three months before admission.

June 18th.—Opening made into chest and tube inserted in posterior axillary line between seventh and eighth ribs.

August 5th.—Discharged cured.

March 19, 1892.—Seen to-day. Lung well expanded. Is well with the exception of at times he is troubled with bronchitis.

Case VI.—J. E., aged eight years. Admitted September 21, 1888, with the history of having been operated upon for empyema on left side five years ago.

Patient now has an empyema on the same side. Temperature high.

September 25th.—Ether. Chest opened between the seventh and eighth ribs in post-axillary line. Drainage-tube put in.

October 1st.—Discharge still continues. It is impossible to keep the drainage-tube in on account of the approximation of the ribs. Ether, and a portion of two ribs removed in order to gain space for the drainage-tube.

November 2d.—Wound all closed. There is still a slight amount of dullness. Patient discharged cured.

March 12, 1892.—Examined to-day. Lung fully expanded. There is no lateral curvature. Patient is perfectly healthy.

Case VII.—V. G., aged five years and a half. Admitted September 2, 1889, with empyema on right side, following a pneumonia, it is said.

September 16th.—Ether. Chest opened and drainage-tube inserted in post-axillary line between seventh and eighth ribs.

October 16th.—Wound closed. Lung expanded. Patient to-day discharged cured. Temperature never above normal.

March 12, 1892.—Was seen to-day. Lung fully expanded. No curvature.

Case VIII.—C. J., aged two years. Admitted December 17, 1889, with high fever, 103°. Breathing short and difficult.

January 10, 1890.—Chest found full of pus.

23d.—Ether. An incision made between seventh and eighth ribs, axillary line. Rubber tube inserted. Piece of rib removed.

March 13th.—Discharged cured. Good expansion of lung.

Case IX.—C. W., aged five years. Admitted March 30, 1890. Has been sick for some months following an attack of pneumonia. Some time ago a swelling appeared just below nipple on right side of chest. Opened, and from it there has been quite a profuse discharge of pus ever since. Patient's general condition is bad—face white and pinched, appetite poor, and body much emaciated. Temperature at night, 103°. On examination, is found to have empyema on right side, and that the sinus on chest communicates with pleural cavity.

April 7th.—By the use of tonics, stimulants, etc., patient's general condition has improved. To-day is etherized and an opening made between seventh and eighth ribs in axillary line into pleural cavity. Much pus evacuated. A portion of two ribs removed in order to afford room for drainage-tube.

June 5th.—Up to date temperature has never been above 99°. His general condition is good, but discharge has continued to come from both openings and has been considerable, requiring daily dressing. Yesterday temperature ran up to 102° and discharge increased. Ether, and cavity washed out with Thiersch's solution.

October 13th.—After washing out the cavity, temperature sank to normal and general condition continued good. Was sent to Rockaway for the summer, and has just returned. Discharge has continued, and right side of chest is much contracted. Ether, and four inches of fifth, sixth, seventh, and eighth ribs removed.

December 13th.—Patient soon recovered from the effects of the operation and discharge diminished for a time, but of late has again increased. Ether, and more bone removed from ribs.

January 10, 1891.—Discharge much diminished. Incision entirely healed.

October 1st.—Has been down at Rockaway all summer. Wounds all closed. Patient discharged cured.

May 3, 1892.—Patient examined to-day. Has been well since discharge. There is a lateral curvature of the spine to left, not very marked. There is some sinking of the right shoulder, as seen from behind. In front the right side of the chest is flattened. The ribs have been reproduced. The lung fills the diminished space left by the removal of the ribs.

Case X.—McT., aged eight years. Admitted January 24, 1891. Last June is said to have had pneumonia followed by empyema on the left side. The chest has been aspirated three times, but the fluid has reaccumulated soon after each aspiration.

There is an opening in front of chest communicating with pleural cavity, from which there is considerable discharge. Child is in very bad condition. Temperature high.

January 29th.—Ether. Chest opened in post-axillary line and portions of two ribs removed.

March 8th.—Wound all closed. Chest well expanded. Patient to-day discharged.

Case XI.—G. M., aged six years. Admitted February 16, 1891. Is said to have been taken sick December 25, 1890, with pneumonia. High temperature, followed by convulsions. Since then has had three relapses. When admitted, very anæmic; condition very bad.

February 17th.—Condition poor; temperature, 104°; pulse, 160; respiration, 60; stimulants; pus on right side of chest.

18th.—Began to cough at 8 a. m., and kept it up incessantly until 1.30, when he began to bring up pus—it is said about two quarts.

20th.—On auscultation, air is found to enter pleural cavity freely.

21st.—Ether. Opening made between seventh and eighth ribs. Drainage-tube.

April 6th.—Did well for a time. In March temperature ran up to 104°, with an increased discharge of pus. Patient was etherized, but nothing could be found to account for the elevation; cavity washed out. To-day an opening was made more posteriorly, and a quantity of pus evacuated. This cavity had no connection with the old opening, the discharge from which had almost ceased.

May 26th.—Since the last note patient has improved rapidly; all wounds are now closed, and he is to-day discharged cured.

March 19, 1892.—Is seen to-day. Lung fully expanded; is in perfect health; no lateral curvature.

Case XII.—H. H., aged five years. Admitted February 24, 1891. No history can be obtained. Child in very poor condition; temperature elevated; chest flat on right side; temperature, 102° in the evening.

March 15th.—Ether. Opening made between seventh and eighth ribs; drainage-tube.

April 15th.—Patient discharged; good expansion of lungs. Temperature has only once reached 102° since operation; that was due to the fact that the tube became blocked. After dressing, it dropped to 97·5°, and did not rise again much above normal.

May 20, 1892.—Is reported well. Is in an institution.

Case XIII.—R. McC., aged six years. Admitted May 26, 1891. Had pneumonia four weeks ago; since then has not gained strength; no fluid in pleura.

June 3d.—Had chill; temperature, 103°; complains of no pain.

May 4th.—Pleura found full of pus; temperature, 103°.

5th.—Ether. Opening between seventh and eighth ribs, and a portion of both removed for drainage-tube.

July 6th.—Discharge cured; good expansion of lung. Immediately after operation, temperature fell to normal, and has only once been 100° since.

March 19, 1892.—General condition good; lung well expanded; is troubled with a short cough at times.

Case XIV.—G. K., aged seven years. Admitted April 25, 1891. Two years ago had typhoid fever, followed by pneumonia, it is said, and has not been well since. One year ago a swelling appeared on right side of chest, near the nipple; it increased, and finally opened, discharging fœtid pus in great quantities. This sinus has never closed. On admission, patient is in bad condition; temperature from 99° to 101° in the evening, and sinus discharging fœtid pus.

April 27th.—Ether. Opening made in axillary line, between seventh and eighth ribs; drainage-tube.

May 26th.—Was removed from the hospital by his parents; discharge still from chest, but patient's general condition very much improved.

May 21, 1892.—Patient reported for examination. There is marked contraction on the right side of chest, the ribs being much sunken in. There is a marked lateral curvature of the spine, and there is marked deformity. On auscultation, air enters the right lung and there is some dullness. General condition of patient excellent. Wounds all closed.

Of these fourteen cases, nine are said to have followed a pneumonia and one scarlet fever, and in four the history does not state the nature of the previous illness.

Two cases came on while in the hospital; in one the advent was sudden, with high temperature and great prostration; the other was insidious, there being but little to call attention to the lung.

The diagnosis has always been made with the hypodermic syringe. In two cases, with negative result at first, due either to too short a needle or from the thickened pleura being carried inward. A needle is now used about two inches and a half long, and of larger caliber than those usually furnished with hypodermic syringes. Aspiration has never been followed by cure in these cases.

In regard to the temperature, in eleven it was high, in one running to 104°, but usually it is not higher than 102°. In a few cases no elevation of the temperature has been observed. Those cases in which perforation had taken place showed the highest temperature.

The rule has been to operate as soon as a diagnosis has been made, as there is nothing to be gained by delay. Excessive debility is not a contra-indication to an early operation, but a reason for emptying the pleural cavity as soon as possible. It has always been found that after the removal of the pus the temperature has immediately fallen and the appetite improved. Ether has always been used, but, in cases of great prostration, only enough to blunt sensibility, the drainage-tube being inserted as rapidly as possible, leaving any further proceeding until the patient was stronger.

The opening has always been made in the post-axillary line, between the seventh and eighth or eighth and ninth ribs.

In only two cases has the cavity been washed out, and in these the contents of the abscess were fœtid at the time of operation. In one case later the cavity was washed out with pyoctanin to stop suppuration; it seemed to act well. No accident has ever happened. It has been the rule in old cases to remove a segment of two ribs, in order to afford ample room for the drainage-tube. In cases where it was not done at first it has been called for at a later date.

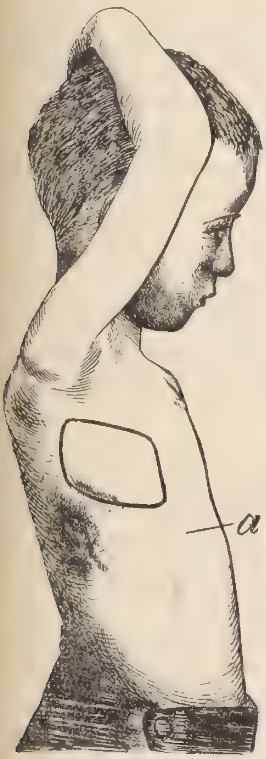

Fig. 1.

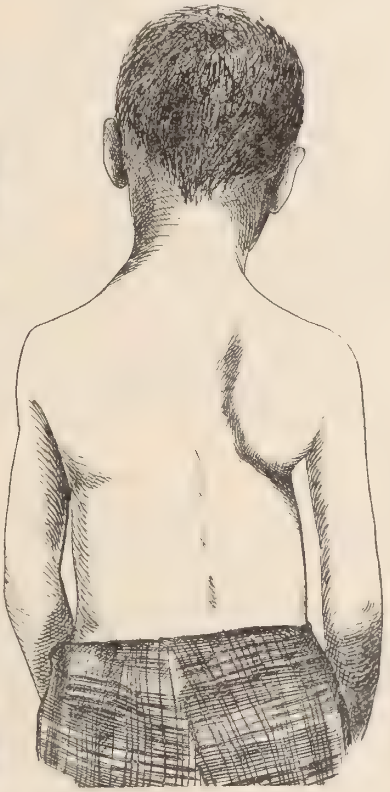

Fig. 2.

The reason for this is that, although there may be plenty of room while the chest is filled with pus, as soon as it is evacuated either the lung must expand or the ribs fall in and the space left by the pus tend to be obliterated. In old cases the lung is bound down by quite firm adhesions and can not expand rapidly, so the ribs fall in, and the drainage-tube is either forced out or is pinched and ceases to act as a drain. In one case the ribs overlapped one another, so that a portion of the whole width of the ribs had to be removed.

In two cases Estländer's operation has been performed; in one, three or four inches of the fourth, fifth, sixth, and seventh ribs were removed; in the other, four or five inches of the fourth, fifth, sixth, seventh, and eighth. The first patient died from amyloid degeneration; the second recovered.

Ten patients have been seen and examined since their discharge from the hospital. In eight the lung is fully expanded; there is no lateral curvature of the spine. One or two patients complain of a short, dry cough. The two cases in which the lung has not expanded are Cases IX and XIII; in the first the ribs were resected, and in the second the empyema had existed for a long time; the chest wall had been perforated by the abscess, and it is probable that the lung was so firmly held down by adhesions that it was impossible for it to expand, and it is a good example of a neglected empyema.

In most of these cases the pleural sac was much thickened and the lung slow in re-expanding, yet, with the above-mentioned exception, the patients all made a good recovery and have continued well. In one case there were two pus cavities, which had to be drained through separate openings.

There has been only one fatal case, and this patient died from the effects of long suppuration.

In two cases there is considerable deformity of the chest walls (Cases IX and XIV); in the first, Estländer's operation was performed; the second was a case of long-standing empyema, with spontaneous perforation of the chest, and the lung has never expanded.

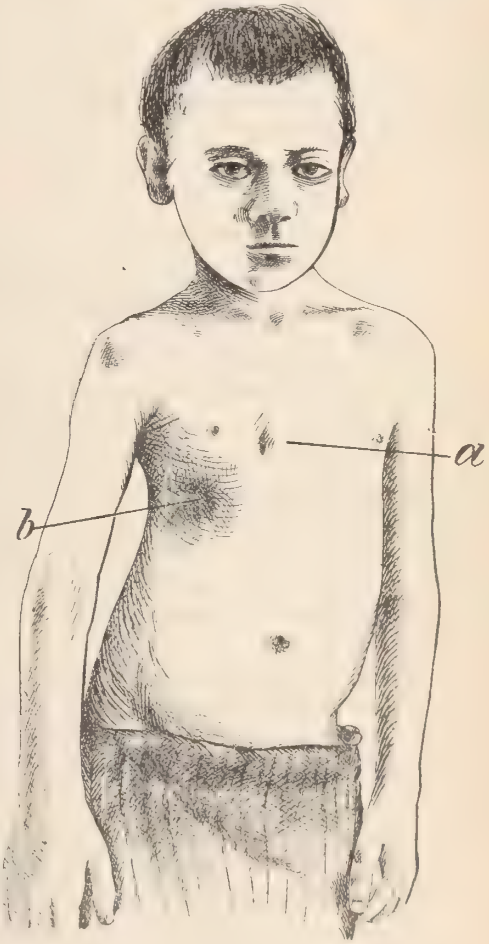

Fig. 3

In the first case the diseased side of the chest is much flattened and depressed; there is a slight lateral curvature, and the shoulder on that side drops some (Fig. 2); in front (Fig. 1) the chest walls are flattened. The dotted lines indicate the space from which the ribs were removed, as well as the extent of the deformity. The point *a* is the normal line of the chest, and above it is seen the depression. The ribs have been reproduced. As compared with the other case (Case XIV, Fig. 3), the result is far superior, both as to the use of the lung and the amount of deformity. Fig. 3 shows the distortion of the chest and upper portion of the body in this case. *A* is the point at which the abscess opened; *b*, the point of operation. The latter has become displaced by the sinking in of the chest walls on that side. There is a very marked curvature of the spine, accompanied by the usual rotation, and an inclination of the whole body to the right side, as well as great depression of the right shoulder. The deformity is very perceptible when he walks, even through his clothing. The case is a good illustration of the result of a neglected empyema, with non-expansion of the lung.

Re-expansion of the lung, after an operation for empyema in children, may be confidently looked for if adequate drainage is secured, and to this end the pus should be removed as early as possible. In case a perforation of the lung takes place, I think that the chest should be opened at once and good drainage afforded, as giving the child a better chance to recover. Case XI illustrates the advantage of immediate operation.

The result, as far as heard from, has been permanent, and all the patients examined, except in Case XIV, are healthy and in good condition, and no deaths have occurred among those discharged cured.

HOW LONG SHALL A CHOLERA-INFECTED VESSEL BE DETAINED AT QUARANTINE?*

By ALFRED LUDLOW CARROLL, M. D.

It may seem an anachronistic impertinence in this nineteenth "*fin de siècle*" to discuss a question which is relegated by presidential proclamation to the States that it held in the fifteenth century—before the port of New York, under the guardianship of an imported Goddess of Liberty, had been discovered. Yet it is time that the voice of the profession be raised in protest against the recent reversion to barbarism which has cast an indelible blot upon our civilization.

The answer to the question allotted to me might be given in the three words—not original with me—"a few hours," and my task would end. But, to explain it, I must state some of the reasons which are accepted by well-informed epidemiologists and sanitarians.

1. The observation of Dr. John Snow, in 1849, that the poison of cholera lay in the discharges from patients, has been scientifically verified, and the saying of Sir John Simon, the greatest hygienist of the age—that what gives cholera "is (mediately or immediately) cholera contagium discharged from another's bowels"—is as valid to-day as when it was uttered twenty-five years ago. As Ernest Hart happily phrased it in a recent address, We may eat cholera and drink cholera, but we can not "catch" cholera in the sense in which we "catch" measles, scarlatina, or whooping-cough, it being "a filth-disease carried by dirty people in dirty places."

2. Conveyance by means of inanimate objects is possible only in the case of articles soiled by cholera discharges. For this reason, the luggage of cabin passengers rarely needs detention; nor is there any authentic suspicion of the transference of cholera by new merchandise, which is practically beyond the reach of such specific soiling during the voyage hither. The danger lies chiefly in the often dirty habits and tainted clothing of immigrants in a crowded and almost unventilable steerage. The alleged "infection" of a vessel is secondary to these conditions, and due to the same specific soilage.

3. Whether the pathogenic potency of the "cholera spirillum" has been overrated—as is believed by Klein and other careful observers—or whether it must wait for a favorable adaptation of its environment to the production of a ptomainal "*tertium quid*," there is strong evidence that the cholera discharges are virtually harmless while fresh, their virulence apparently depending on the attainment of a later fermentative change.

So well known are these facts of observation that few, if any, physicians present would hesitate to treat a case of cholera in a private household with full assurance that the malady should not extend to any other person. Indeed, cholera patients are admissible to nearly every hospital in London.

With such data before us, the problem of dealing with ships can be reduced to very simple terms. Cholera may be, and has been, stamped out on shipboard, and the vessel so guarded from the spread of the disease as to need no rigors of quarantine on its arrival. Two instructive illustrations of this were cited in a paper read before this academy in 1873 by Dr. Vanderpoel—then our most efficient health officer—wherein he felt justified in giving pratique with but twenty-four hours' detention.

Even if—through lack of cleanliness and care in transit—a ship reach port with cholera cases on board, she can quickly be rendered safe to return to commerce. But, to this end, certain preliminary rules must be observed. In the first place, all passengers should be instantly removed from her, the sick being separated from the well and at once transferred to hospital; those who have been exposed to infection (and this class seldom includes cabin passengers) should be kept under observation until the period of incubation is past. To keep the well and the suspected on board for this "quarantine of observation" is not only contrary to the dictates of humanity and common sense—since it multiplies the risks of continuance and intensification of disease and the imperilment of human lives under the most unfavorable conditions—but prolongs the useless detention of commerce and delays the very purpose of preventive medicine.

The vessel, having been thus emptied of its human freight, has no longer a latent stage of incubation to undergo, and in a very short time its bilge may be washed out, and every part of it that has been possibly subject to the specific cholera contamination may be thoroughly cleansed and disinfected. Close attention, however, must be paid to this adverb, "thoroughly"; for, as in antiseptic surgery, a single neglected filth-spot may vitiate all our other precautions. But thoroughness does not imply slowness; it rather means rapidity of action in every detail.

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* Read before the Section in Public Health of the New York Academy of Medicine, September 19, 1892.

Finally, to avoid senseless panic and needless detention, let us be sure, on ship or on shore, that we really have Asiatic cholera to cope with. The differential diagnosis during life is not very difficult, and the post-mortem results were familiar to us before Koch's discovery of what he then supposed to be the only "comma bacillus." Other "commas" were soon found, distinguishable solely by their variance of behavior in culture-media; and recent reports seem to indicate the evolution of still another variety, showing the same reaction as that of Koch, where neither the symptoms in life nor the anatomical lesions and microscopical appearances of the intestinal contents were regarded as at all suggestive of cholera Asiatica. I have no desire to depreciate the benefits which we have received from the bacteriological laboratory; but clinical observation and pathoanatomy are yet extant, and if we are to defer diagnosis until a week after death, we must, according to present lay logic, sequestrate passengers as long as they live, and detain ships for an equal time.

I am quite aware that there is little novelty in what I've said upon a hackneyed subject; but I trust that the very lack of originality may lend some reminding value to my words.

SULPHUR FUMIGATION IN CHOLERA.*

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Fumigation by sulphur is older than most writers state, dating back not to the last century only, but to the time of Homer. The following passage occurs in the *Odyssey*, after the slaughter of Penelope's suitors, when their dead bodies formed a huge mass of lifeless flesh:

> "Anon yet spake the chief
> To the dear nurse Eurycleia: Fetch me brimstone,
> Sweet'ner of taints, and fetch me fire, old woman!
> That I may fumigate the hall. . . .
> And straight
> She fetched him fire and brimstone, and Odusseus
> Right thoroughly fumigated everywhere,
> The common hall, men's room, and all the courts."

From that time—1000 B. C.—down to the present, sulphur has been in use by sanitarians and others for purposes of cleansing and purifying. Indeed, it has in many instances been the only agent recommended and employed for this purpose, so great has been the confidence of health officers in its efficacy. If endurance were the criterion, certainly three thousand years of almost continuous existence would place sulphur fumigation far in the lead.

The confidence which for so many centuries had been reposed in sulphur dioxide as a disinfectant received a serious blow when, in 1883, Koch and Wolffhugel announced the results of their experiments with this agent, declaring that it was not effective in the destruction of the spores of certain micro-organisms. While this statement was true and incontrovertible, still the conclusion which was drawn from it by many was unwarranted. At that time less was known about the specific pathogenic bacteria, and it was considered that an agent to be of value as a disinfectant must be capable of destroying spores as well as the micro-organisms themselves. Sulphur dioxide would not do this, therefore sulphur dioxide was unreliable and its use must be abandoned. There is no doubt at all but that this reaction was a most wholesome one. Health officials had become too careless in their method of using this agent, and a declaration that it would not do everything opened their eyes to the truth. Dr. Sternberg tells us that in Italy during the epidemic of 1884–'85 travelers were required to pass through the fumes of burning sulphur. Koch was one of these, and he had in his pocket at the time a culture of cholera which he afterward cultivated. Such practices as this could not but throw ridicule on the method of employing sulphur in any way, and it was time a halt was called.

The great difficulty had been that, before the days of bacteriology, there was no satisfactory scientific test which could be applied to determine the disinfecting value of any agent. Indeed, the very term "disinfection" was used in the loosest way; to one meaning one thing, to another another. The line of demarkation between "deodorizer," "antiseptic," and "disinfectant" had not been sharply drawn even by scientists, so great an authority as Littré, in his *Dictionary of the French Language*, defining a disinfectant as "a substance which destroys, chemically, bad odors." It was not until we had such a definition as that given by the Committee on Disinfectants of the American Public Health Association that we had a definite idea in mind to which experimental research could be directed. The definition referred to is, that a disinfectant is "an agent capable of destroying the power of infectious material." Bacteriology has shown that several of the so-called zymotic diseases are due to the presence of micro-organisms, each disease having its own specific ætiological factor, and that there is no more reason for expecting wheat to appear when oats are sown than to look for one of these diseases when only the germs of another are present.

Without dwelling longer on this phase of the subject, let me express the opinion that we have now reached a point where we must pursue a different policy from that of the past. When there was no knowledge of pathogenic micro-organisms, reliance had to be placed on those agents which general experience seemed to show to possess value. Now, however, we must demand something more. It has always been regarded by the medical profession as an act of folly to search for a panacea, a cure-all, in medicine. The time has, in my judgment, arrived when it is equally irrational for us to expect to find a single disinfectant which will meet all exigencies, and which is equally potent in all diseases. The life history, the thermal death-point, and the resistance to various agents of many pathogenic germs are now known, and they differ to so great a degree that what is true for one is not true for all. The science of bacteriology should be the father of a science of disinfection. The methods and the agents which are employed should be such as are adapted to the case in hand. If typhoid has invaded a household, our prophylactic and hygienic treatment should be such as science has shown to be competent to stop its further progress; and if it is diphtheria that we are called on to treat, our measures of prevention should be, not those applicable to typhoid, but those which actual experiment has demonstrated to be efficient in controlling diphtheria.

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* Read before the Section in Public Health of the New York Academy of Medicine, September 19, 1892.

In other words, as we look for no panacea in medicine, so do we not rely upon any one method of disinfection in all infectious diseases, but employ in each that which scientists have shown to be competent to control the disease in question. For those diseases the pathogenic micro-organisms of which have not yet been discovered, we shall be compelled for the present to be guided by general principles.

If this plan of procedure be the correct one, then the sole question which we have to consider to-night is, What disinfecting value has sulphur dioxide in cholera? Koch, Sternberg, and others tell us that there is no evidence that the comma spirillum produces spores; indeed, this is a point in which the spirilla differ from the bacilli, and I think I am not wrong in the statement that no spirillum produces spores. This I regard as a very important matter to decide. It is one thing to say that there is no evidence of the spore-producing power of an organism, and quite another to say that it does *not* produce spores. In the latter case we are safe if in our disinfection we leave the spores out of account, while in the former a more continued research may show that spores do form, and in that case our measures of disinfection would be inadequate. The experiments of Koch were sufficient to satisfy him that the cholera spirillum does *not* form spores, and certainly his methods of determining this point seem to fulfill all requirements. Here, then, we have a starting point, and a most important one. Did the cholera spirillum produce spores, sulphur dioxide would be at once ruled out as possessing no disinfecting value. The contrary being the fact, we must continue our investigation further. I have up to the present time been able to find but two sets of experiments in which the action of sulphur dioxide upon the cholera spirillum has been the subject of inquiry, and to these I shall invite your attention. If there are others, I shall be glad to be informed.

The first series to which I shall refer is that undertaken by Dr. Herman M. Biggs, whose qualifications for such an investigation need not be mentioned in this audience. The details of the experiment and the results may be found in an article entitled The Germicide Power of Sulphur Dioxide, in the *Medical News*, December 17, 1887. Dr. Biggs, at the request of Dr. W. M. Smith, health officer of the port of New York, set about to determine the disinfecting power of anhydrous sulphurous acid as used by the so-called vacuum process. To give you a better idea of this method and the results I will quote from the article referred to, using only so much of it as refers to the experiments with the cholera spirillum.

The vacuum process consists in principle in the exhaustion of the air from an air-tight receiver, in which the goods or materials to be disinfected have been placed, and in the subsequent introduction of the gas (as derived from liquid sulphurous acid) in pure form and under pressure. In the employment of the gas in this manner, as compared with its use in any previous experiments, two new factors come into action. The first consists in the formation of a vacuum, and the consequent withdrawal of the air from the minutest pores of the material to be disinfected, thus insuring penetration of the gas to every particle of the material; and the second, in its use in a volume of one hundred per cent., and at any required pressure, varying from twenty to one hundred pounds to the square inch. In these experiments a vacuum was first produced, thus absolutely insuring penetration of the gas and its full action upon every part of the materials to be disinfected, and then the gas in one hundred per cent. in volume was introduced under high pressure.

In all the tests described the gas as used was derived from the liquid anhydrous sulphurous acid. The experiments were primarily undertaken to determine the practicability and efficiency of the "vacuum process" for the disinfection of rags in bale, and they will be divided into two classes, viz.:

1. Those made in the Carnegie Laboratory, in which infected rags were exposed to the gas in much less than one hundred volume per cent. and without pressure.

2. Those made at the Pollock Chemical Company's works, in which rags similarly treated were introduced into the center of a tightly packed bale of rags and the bale then subjected to the process described.

The first series of experiments—namely, those made in the Carnegie Laboratory—were designed to determine the efficiency of the gas as a disinfectant when used in a large volume per cent.

The second series—*i. e.*, those made with the bales of rags—must show both the penetrating power of the gas and its disinfecting value when present in a pure atmosphere under pressure.

In the first series of experiments the rags were exposed to the gas in a three-gallon glass jar, which could be rendered air-tight. The rags were suspended in this jar and then the liquid SO_2 was either thrown directly into it from a siphon or was drawn into a graduate, which was then placed in the jar. It was always the design to use as large an amount of the SO_2 as possible. The amount varied in the different experiments from half a fluidounce to two and a quarter fluidounces. In some instances the liquid SO_2 had not entirely volatilized at the end of the exposure.

In the experiments first made no especial care was taken to charge the rags with pure cultures of micro-organisms before exposure to SO_2, or to prevent the access of spore-bearing or other foreign germs. It was deemed a better proof of the disinfecting power of SO_2 to destroy the cholera spirillum, for instance, when in impure cultures with other germs present, than to destroy this germ when alone, and it was thought possible that it might destroy all forms of organisms.

Experiment III.—An impure culture of the cholera spirillum was used. Two rag cultures and two puncture cultures were made. Time of exposure was about twelve minutes. Moist rags exposed.

Result.—No development of any kind in either of the puncture cultures or in one of the rag cultures, but in the second rag culture a growth appeared, which proved to be a thick spore-forming bacillus. There was no development of the cholera spirillum in this culture.

Experiment IV.—Cultures of cholera spirillum were used. Moist rags exposed. Two rag cultures were made. Time of exposure, about thirty minutes.

Result.—No development occurred in any of the tubes.

Experiment V.—Cultures of cholera spirillum were used. Time of exposure, twenty-five minutes. Three rag cultures were made.

Result.—No development in any of the tubes.

The method of exposure of the rags in the second series of experiments was as follows: The infected rags, either moist or after being previously dried, were introduced at the laboratory into sterilized glass tubes which were open at both ends. These tubes were then plugged with sterilized cotton and the ends covered outside by filter paper. In this condition they were taken to the Pollock Chemical Company's works, where the experiments were made. The following method was employed to show the penetrating power of the gas: A sharp-pointed hollow drill, with a tight screw-cap on one end and perforated by a dozen or more small holes just at its middle, was driven into the center of a bale of rags. Then the glass tubes containing the infected rags were introduced into its lumen, and the cap was set in white lead to insure its being air-tight. Now, the only manner for the gas to enter the interior of the tube was for it to pass to the center of the bale and enter by the perforations in the tube situated there. Aside from the *a priori* reasoning which would indicate that the gas must penetrate every pore of the material after the production of a vacuum, it seemed certain that if the gas reached the center of the bale, entered the interior of the drill, and then passed through the cotton plugs to the infected rags in the tubes, it must reach every part of the bale. After the drill had been thus introduced, filled with tubes and closed, the bale of rags was placed in an air-tight cylinder, a vacuum of twenty-eight or thirty inches was produced, and the gas was then introduced in pure form under pressure. The amount of vacuum, the pressure, and the duration of the exposure are noted in each of the experiments, and all were conducted in the same manner. After the exposure, the tubes containing the rags were returned to the laboratory without removal of the cotton plugs, and cultures were made from them as described above.

Second series of experiments made at the Pollock Chemical Company's works:

Experiment I.—Vacuum, twenty-nine inches; pressure of gas, thirty-five pounds; exposure, twenty-five minutes. Cholera bacillus and other micro-organisms were exposed. Cultures neutralized after exposure. A number of inoculations were made from each of the kinds of germs exposed.

Result.—No development occurred in any of the cultures.

Experiment II. — Pollock Chemical Company's works. Vacuum, twenty-nine inches; pressure, twenty pounds; exposure, twenty minutes. After this pressure was reached, cholera spirillum and other micro-organisms were exposed.

Result.—No development of cholera spirillum occurred in either of the two puncture cultures. In three out of six rag cultures development took place on the second or third day, but even on the ninth no liquefaction of the gelatin had taken place, showing absolutely that the growth was not due to the cholera spirillum, as this liquefies gelatin by its growth.

Experiment III.—Two tubes were employed which contained rags infected with the cholera spirillum; the rags moist. In the cultures made from them no growth appeared.

Experiment IV. — Experiment was made at the Pollock Chemical Company's works, in which a bale of Chinese rags was used. This was very tightly packed, but was of small size. Cultures of the cholera spirillum on moist rags were exposed, and cultures were made after the method previously described. The usual controls were made and development occurred in all on the second or third day. Inoculations were made from rags after exposure of four tubes from cholera spirillum by puncture.

Result.—No development occurred in any of the tubes.

As will be seen by reviewing the results obtained in the previously detailed experiments, the sulphur dioxide has never failed to destroy the cholera spirillum.

The cholera spirillum was used as one of the organisms exposed in most of the experiments, and the rags were more often in a moist than in a dry condition. There seemed to be an immediate danger, at the time the experiments were made, of the introduction of cholera by rags, and it was deemed of the greatest importance to determine the action of the gas on this organism. An interesting point came up in this connection. The cholera spirillum is destroyed by drying or by acids, so that if the rags are thoroughly dry there is little danger certainly from the usual forms of the cholera spirillum, and if moist they are rendered acid, so that this would prevent the development if it did not destroy the germs.

The results obtained in these experiments show that sulphurous-acid gas in one-hundred-volume per cent. under pressure, with an exposure of thirty minutes, will destroy the cholera spirillum.

The second set of experiments were those conducted by Dr. L. H. Thoinot and M. Masselin, and are recorded in the *Annals of the Pasteur Institute,* August 25, 1890, under the title, Study of the Disinfecting Value of Sulphurous Acid. I do not know the qualifications of these investigators, but give a brief statement to you of the results as I find them. Various micro-organisms were experimented upon, among others the cholera spirillum. The cultures which were used had been in the laboratory several months. They were submitted for twenty-four hours to the action of sulphurous acid produced by the combustion of sixty grammes of sulphur per cubic metre in a room having a capacity of fifty cubic metres, all the openings being hermetically sealed.

The conclusion drawn from the experiment was that the spirillum did not resist the sulphurous acid in the amount mentioned, and that fifty and even forty grammes were sufficient to destroy it. The experimenters counsel, however, the use of sixty grammes per cubic metre as being more certain.

The experiments of Biggs and of Thoinot and Masselin are certainly in favor of the value of sulphur dioxide as a disinfectant in cholera, and are strongly confirmatory of the experience of health officers in this regard. After the epidemic which visited this country in 1866, Dr. Dalton, Sanitary Superintendent of the Metropolitan Board of Health, stated that "fumigation, either with chlorine or sulphurous-acid gas, had, with two exceptions, been followed by complete immunity from the disease."

In the regulations of the British Army in India one of the methods directed for the purification of a room in which cholera has occurred is to fumigate it either with chlorine or sulphurous-acid gas; no especial regard is paid to the quantity, the instruction being to burn in the room or tent two ounces of sulphur in a metal basin and leave the apartment closed for two or three hours—certainly a very loose way of directing the process. I find it stated that this, among other regulations, was declared by the late Surgeon-General Cunningham to be based solely upon long experience in India, without regard to theoretical considerations, a statement which carries with it an idea of the confidence which those familiar with the disease reposed in sulphur fumigation.

The conclusion which, I think, we may justly draw from the knowledge which is now in our possession, is that sulphur fumigation has a place among the disinfectants applicable to cholera. It is, of course, not to be used to the exclusion of other agents, such as bichloride, carbolic acid, and lime, but in conjunction with them. Whenever we can not use steam and have need of a disinfectant which possesses some of its properties of entering nooks and crannies in other words, when we have need of a gaseous disinfectant —we may then resort to sulphur dioxide produced in the manner recorded by the American Public Health Association and practiced by the boards of health throughout the country.

QUARANTINE,

AND THE PRESENT STATUS OF QUARANTINE LAWS.*

By S. T. ARMSTRONG, M. D., Ph. D.,
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In presenting for consideration the subject of the laws regulating quarantine, and the various questions pertaining to their administration, it has seemed best to make a few prefatory remarks defining the writer's use of the word "quarantine" as well as the reasons why quarantine should exist. This is not done from any desire to question the intelligence of the auditors, but because laymen and physicians may attach different significations to the term, and even sanitarians in the United States and Great Britain use it to express different ideas. None accords to it the one-time signification of a forty days' detention, hieratical in its origin in the religious custom of Lenten purification, as well as pseudo-scientific in a derivation from the obsolete doctrine of critical days. It may be defined as a period of varying length during which persons coming from localities where epidemic disease exists are detained for the purpose of observation at the locality where they arrive. It may be seen that this applies to an inland as well as to a seaport town; the period of observation may be as brief as in a sanitary-inspection service or include a detention of several days; and inferentially the term includes a properly equipped establishment for the residence, if necessary, of well persons who are detained for observation; a hospital for caring for any that may be taken ill; appliances and apparatus for disinfecting clothing and baggage; and a suitable corps of physicians, trained nurses, and other employees necessary for the effective administration of the establishment.

The sixth section of chapter 534 of the statutes of the State of New York provides that the diseases against which maritime sanitary regulations apply are yellow fever, typhus or ship fever, relapsing fever, cholera, small-pox, scarlatina, measles, diphtheria, or any disease of a contagious, infectious, or pestilential character, which shall be considered by the health officer dangerous to the public health. The quarantine laws or regulations of most of the States include these diseases, and the regulations of the United States add leprosy to the list. Some of these diseases are so familiar to us that in our daily life we give them but little heed, while others arouse in the mind, when mentioned, a dread that is the consequence of a knowledge, vague though it may be, of the ravages they have committed by their epidemic manifestation. Those of the contagious or infectious diseases that are endemic in America may, in a series of years, cause as many or more deaths in a locality than are the consequence of an epidemic of one of the exotic contagious or infectious diseases. For among the many blessings conferred upon our country is that of not being the *fons et origo* of any epidemic disease; and the epidemics of yellow fever, typhus fever, small-pox, and cholera that have ravaged this country have always been imported.

One of the fundamental duties of the State is that of protecting the lives, and consequently the health, of its citizens; and we may infer that both State and National Legislatures regard quarantine as one of the means of protecting the people from infectious diseases, as all of our maritime States have enacted quarantine laws, and as early as 1799 Congress enacted its first law on the subject. And yet if we were to consider the matter from the standpoint of the English sanitarians, we would be but little justified to perpetuate the system. It is but a few years since Professor F. de Chaumont said that quarantine was "an inheritance, truly a *damnosa hereditas*, from the Venetian republic, which instituted this system to try and prevent the spread of the Oriental plague from the Ottoman dominion to themselves," and, further, that "when we consider that an efficient quarantine is a blank absolute impossibility, the whole thing at once tumbles to pieces." While Mr. Edwin Chadwick said, in regard to the efficacy of quarantine, that, in his opinion, a people might as well quarantine against the east wind as against the diseases that we have mentioned, Dr. George Wilson, in the last edition of his *Handbook of Hygiene*, while condemning an unlimited quarantine of detention, says "quarantine in a less restricted sense is often of immense advantage in preventing the spread of infectious disease." And Mr. Ernest Hart, in a recent publication in the *British Medical Journal*, says: "Quarantine has been defined as an elaborate system of leakiness; impossible if it were complete, because implying isolation and arrest of intercourse; useless and dangerous if incomplete, because inviting a false reliance and offering a false security. Medical inspection, with the powers of detention, is a more real precaution and more easily made effective; but under the circumstances it is only a sieve, which would strain off the coarser majority of cases, but through whose many apertures the more subtle are already passing and would pass." These quotations have been made from the writings of the better known English sanitarians, in order to show the trend of professional opinion in their country, whose commerce is the largest in the world, and which opinion can not, as has been maintained, be the result of the worship of the Mammon of pounds, shillings, and pence.

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They profess to base their indifference to a quarantine in general on the improved sanitary condition of their cities, towns, and villages. And yet it is difficult to understand a sentiment that professes to ignore a maritime quarantine, and yet provides a maritime inspection service, with crude appliances for caring for the sick who are detained from an infected vessel. The code of rules of the English Medical Officers of Schools Association provides that a quarantine of from twelve to twenty-one days, according to the disease, with thorough disinfection on the pupil's return to school, be required of all pupils exposed to an infectious disease. If such methods are deemed desirable to prevent an epidemic in a school, in consequence of one or more of the pupils having been exposed to an infectious or a contagious disease, why is not the principle just as applicable to the prevention of an epidemic in a city, in consequence of one or more of the passengers on a vessel arriving at that place having been exposed to one of what may be considered the epidemic diseases? To ask this question seems to me to answer it affirmatively. And while we may not know the *contagium vivum* of small-pox, yellow fever, or typhus fever, as we do that of cholera, still we do know that the probable micro-organism of each of these diseases has a viability that may endure for months. This is attested by many well-authenticated examples, in the case of each of the diseases specified, of a sporadic or epidemic appearance of a disease in consequence of the exposure of healthy persons to some infected fomites. *Ex nihilo nihil fit* is an axiom that is as true in medicine as in any other science, and if quarantine can keep out the something that causes the disease, the contagious principle that is not wafted by the east or any other wind for either an indefinite or definite number of miles, then quarantine is certainly justifiable. The welfare of the many must be given precedence rather than the inconvenience of the few.

While the idea of quarantine may have been a heritage of history—for the Egyptians, Hindoos, Jews, Greeks, and Romans carried out some of its principles—it was reserved for the great Italian commercial cities to enact the first laws on the subject in the fourteenth century. An examination of these early regulations shows them, in at least one instance, to have been devoid of both ambiguity and prolixity, for the persons on a plague-ship were to be killed and the cargo destroyed. Severe as this may seem, it may be here recalled that the English law, in force until 1826, made evasion of quarantine a felony, for which the condemned person was not allowed the benefit of clergy. The early laws of the Venetian republic on this subject had always seemed to me to instance an early abandonment of the belief that epidemics were a means of divine chastisement, rather ascribing them to some unknown but contagious principle; and from this point of view this early republic led the van in what was commendable progress instead of handing to posterity a *damnosa hereditas.* France, Spain, and England were almost contemporary with Italy in enacting quarantine laws, and William Penn formulated for the province of Pennsylvania the first law on this subject in America. Massachusetts enacted a law in 1701, and New York in 1758. After the Declaration of Independence most of the colonies preserved their sanitary laws, and from time to time the States have enacted such additional laws as seemed necessary for the maintenance and administration of their quarantine establishments. So to-day there exists in each of the United States bordering on the sea sanitary legislation that, while similar in generalities in each of these States, is yet more or less characteristic of the legislative system of the State by which it is enacted. Besides this autonomous authority, there are certain national laws that are to be considered.

To review the quarantine laws of the different seaboard States would be of small advantage, and I desire to consider the national legislation on the subject.

A law enacted February 23, 1799, provides that the quarantines and other restraints established by the health laws of any State shall be duly observed by the local officers of the Treasury and War Departments; and it further requires that these officers shall faithfully aid in the execution of such quarantines and health laws, according to their respective powers and within their respective precincts, as they shall be directed, from time to time, by the Secretary of the Treasury. This statute further provides for the discharge of the cargo of a vessel in quarantine, and for the deposit of the goods in warehouses that shall be purchased or erected under orders from the President.

Based upon the provisions of this law, that clearly recognizes the right of the States to enact quarantine laws, is the law of April 29, 1878, which confers upon the Surgeon-General of the Marine-Hospital Service authority to frame all needful rules and regulations for the purpose of enforcing quarantine, in the event of any contagious or infectious disease appearing in any foreign port or country. This law also explicitly states that these rules and regulations shall not conflict with or impair any State or municipal quarantine laws. This statute further provides, in section five, that local quarantine officers shall, upon the application of the respective State or municipal authorities, be authorized to act as officers or agents of the national quarantine system and shall be clothed with all the powers of United States officers for quarantine purposes, though receiving no pay or emolument from the United States. It is provided that vessels coming from a foreign port or country where cholera or yellow fever exists, or small-pox is known to have existed in an epidemic form within thirty days preceding their arrival, and vessels or vehicles conveying any person or persons, merchandise, or animals affected with any contagious disease, or having had the latter on board within thirty days preceding their arrival, shall not enter any port of the United States until disinfected, and certified to be so by a medical officer of the Marine-Hospital Service, or other agent of the Treasury Department.

This latter section would seem to necessitate a sanitary inspection of all vessels entering a port by one of the officials above specified. And the present Attorney-General has decided that this act in general empowers the National Executive to supplement the State statutes and regulations wherever and whenever necessary.

In August, 1888, Congress enacted a law that provided a penalty for trespass upon quarantine territory under the jurisdiction of the United States, as well as a penalty for violation of any of the quarantine regulations; and also made appropriations for the establishment of certain quarantine stations; and in March, 1890, a law was enacted to prevent the introduction of contagious diseases from one State to another, and for the punishment of certain offenses of violation of the quarantine laws and of the rules and regulations that had been framed by the Surgeon-General of the Marine-Hospital Service for the administration of quarantine. This has been referred to as the Interstate Quarantine Law.

These laws herein referred to comprise the national legislation relating to quarantine. From the beginning this duty has been assigned to the Treasury Department, for to that department belongs the administration of the laws relating to commerce, of those relating to the survey, lighting, and policing of our coast line, of those relating to immigration, and of those relating to the hygiene and sickness of our mercantile marine. To perform this latter duty the Marine-Hospital Service was organized in 1798, and to-day its officers are on duty at every principal seaport in the country. Besides this, the immigrant inspection service and the quarantine service have been added to its duties, because it was the regularly organized medical bureau of the Treasury Department. The efficiency of this service has been demonstrated in the sanitary history of the United States during the past five years; and indeed it would be superfluous to make any argument regarding the desirability of having an efficiently organized corps, trained to perform quarantine duty, whose experience in the discharge of their duty, first in one then in another section of the country, would familiarize them with the prevailing diseases of these sections, and whose freedom from political influences makes them independent of outside pressure in the discharge of their duties.

It is the unfortunate change in the health officials of a port, with almost every change in the political features of a State or municipality, that makes the perpetuation of the State or local system of quarantine undesirable. The best methods of administering quarantine, as is the case with the best methods of administering any professional duty, are not the fruit of intuition, but the results of experience and training. While most of our health officers are to be commended for the efficiency with which they discharge their duty, still it is too often the case that, just as an official becomes of value, he must go out with the administration that appointed him. Therefore we are led to ask, Would it not be better if our quarantine laws were to be administered by the officers of the Marine-Hospital Service, whose duty is now in that line in part? To organize a new service is not desirable if there is one in existence that can perform the work. Of course this work can not be done by any national service until Congress passes a law assuming national authority in the matter. The Supreme Court of the United States has virtually decided that Congress has such authority, for in the case of the Morgan Steamship Company *versus* the Louisiana Board of Health (*United States Reports*, vol. cxviii, p. 455) Associate Justice Miller said, in delivering the opinion of the Court (May 10, 1886): "It may be conceded that whenever Congress shall undertake to provide for the commercial cities of the United States a general system of quarantine, or shall confide the execution of the details of such a system to a national board of health, or to local boards, as may be found expedient, all State laws on the subject will be abrogated, at least so far as the two are inconsistent. But, until this is done, the laws of the State on the subject are valid." He further states that "quarantine laws belong to that class of State legislation which, whether passed with intent to regulate commerce or not, must be admitted to have that effect, and which are valid until displaced or contravened by some legislation of Congress."

With the dictum of this, the highest authority in our land, regarding the right of the creation of a national quarantine at all of our seaports, it remains for the people of the country to decide whether they desire such a step taken.

The matter would have to be carefully considered, for nowhere can more efficient health officers be found than at the ports of Boston, Charleston, and New Orleans, nor better equipped quarantine stations than are now in existence at the two latter ports. The health officer of the port of Philadelphia is thoroughly conversant with the necessities of his position, and every sanitarian in the land has sympathized with the heavy responsibility that has fallen on the New York health officer. But there is no assurance that these gentlemen will be continued in office as long as they discharge their duties properly, and beyond this fact is the important one that they are not training other men to take their places. Hence the desirability of having a corps in which tenure of office exists for life and good behavior, and in which there are a number of trained officers always prepared to carry out a well-formulated plan.

It has been attempted to bring in review here the facts that epidemic disease is the result of some organic principle that is not indigenous in this country; that quarantine is a principle of maritime or inland sanitation having for its end the destruction of this organic principle both in the carrier and the things that may be carried; that to enforce this principle certain laws are requisite, and that these laws should be uniform will be conceded; that, in the nature of our local and State institutions, such a uniform quarantine system can best be administered by the General Government; and that a properly equipped sanitary bureau already exists, but vested with insufficient authority to generally administer quarantine. Shall Congress be petitioned to enact the laws necessary to supplement and complete the authority that it has already vested in the Marine-Hospital Service?

ITEMS, ETC.

Precautions in regard to Cholera.—The following circular, dated September 17, 1892, addressed to physicians, nurses, and others, has been issued by the city board of health:

At a meeting of the Board of Health of the Health Department of the City of New York, held on the 16th inst., the following preamble and resolution were adopted:

Whereas, The presence of cholera in this city and its relation to diarrhœal diseases make it extremely important that all diarrhœal discharges be at once disinfected, as many cases of cholera take the form of mild diarrhœa, but the discharges in those cases are as dangerous as from the severer types of the disease; therefore

Resolved, That physicians and nurses are respectfully requested to see that this recommendation is promptly carried out, as in this way the great danger of spreading infection from unsuspected cases of cholera will be greatly lessened.

The American Gynæcological Society.—Among the social accessories of the meeting held in Brooklyn this week were a dinner to an invited company by the president, Dr. John Byrne, and Mrs. Byrne, a luncheon given by Dr. Alexander J. C. Skene, a dinner given by the Brooklyn Gynæcological Society, and a luncheon given by the Medical Society of the County of Kings. The Brooklyn profession has taken good care of its visitors.

The American Orthopædic Association.—The members who have been attending the annual meeting this week met a large number of New York physicians at a reception given at Dr. Lewis A. Sayre's house on Tuesday evening.

Changes of Address.—Dr. T. Cleland, to No. 252 West Fifty-second Street; Dr. George W. Jacoby, to No. 663 Madison Avenue.

The Death of Professor Ludwig Bandl, of Vienna, is announced in the *Lancet*. The deceased was forty-nine years old.

Naval Intelligence.—*Official List of Changes in the Medical Corps of the United States Navy for the week ending September 10, 1892:*

Stoughton, James, Assistant Surgeon. Ordered to the San Francisco.

Spratling, L. W., Assistant Surgeon. Detached from the San Francisco and granted leave of absence for one month.

Society Meetings for the Coming Week:

Monday, *September 26th:* Medical Society of the County of New York; Boston Society for Medical Improvement; Lawrence, Mass., Medical Club (private); Cambridge, Mass., Society for Medical Improvement; Baltimore Medical Association.

Tuesday, *September 27th:* New York Dermatological Society; Buffalo Obstetrical Society; Medical Society of the County of Lewis (quarterly), N. Y.; Boston Society of Medical Sciences (private).

Wednesday, *September 28th:* New York Pathological Society; Metropolitan Medical Society (private); American Microscopical Society of the City of New York; Medical Society of the County of Albany; Philadelphia County Medical Society.

Thursday, *September 29th:* New London, Conn., County Medical Society (extra, New London).

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THERMIC FEVER.

In the *Medical News* for September 3d there is a paper by Dr. W. M. L. Coplin, Dr. D. Bevar, and Mr. H. Somer, Jr., on the effects of heat as manifested in workmen in the heated rooms in a sugar refinery. The temperatures of the rooms varied from 95° to 165° F., and some of the men worked constantly in temperatures from 115° to 118°. There were eight hundred men employed during the day and five hundred in the night, and there were one hundred and two cases of thermic fever occurring in the twelve hours following midnight and one hundred and eleven cases in the twelve hours following midday, during the last week in July. One patient, whose case was the only fatal one, had a temperature of 110°, one had a temperature of 108·8°, and in twenty-eight the temperature ranged between 105° and 108°. In seven it was above 107°, in eleven above 106°, in ten above 105°, and in fifty it ranged between 102° and 105°.

The authors discuss the symptoms of thermic fever, and for treatment advise anything that will increase the peripheral circulation. Atropine in doses of one fortieth or even one thirtieth of a grain was found very useful. Aromatic spirit of ammonia was serviceable whether administered subcutaneously or by the stomach, in the latter case in the dose of half a drachm or a drachm in milk. Nitrite of amyl was used in one case with gratifying results. In seventy-five per cent. of the cases the patient was placed in a low bath-tub, in water of the same temperature as his body, and he was rubbed with large, gritty sponges until redness of the skin was induced. A cold spray was then turned on him so as to maintain the counter-irritation by the force of the impact of the water. The cold bath is said to be useless unless friction is maintained. Antipyrine and acetanilide were found useful in mild cases and no unfavorable symptoms followed their use. Alcoholic stimulants are thought to be indicated to increase the peripheral circulation and invigorate the heart. Subsequent rest is imperatively necessary.

THE CHOLERA.

There is now even less reason to expect an extensive prevalence of cholera in the metropolitan district than there was last week. The number of cases that have occurred since the 6th of September is trivial when compared with the population, and in no instance is the infection known to have spread beyond the premises occupied by the victims.

This state of things does not show that we can yet safely relax our vigilance, but it does seem to favor the thought that the frightened communities that have declared a quarantine against New York have done so on very slight occasion. As the *Sun* pointedly puts it, nobody ought to be afraid to come to New York, for nobody here is afraid to stay here. The activity of our sanitary officials must, however, be maintained, and it is reasonable to assume that their methods of procedure will be modified and mitigated in accordance with the light that intelligent investigation may continue to throw on the art of restraining the diffusion of infectious diseases. As the ultimate outcome of the annoyance and suffering to which many of our returning citizens have been exposed, there may soon come—and we earnestly hope there will come—a simplification of our quarantine system. In the mean time, it is gratifying to be able to record that the Chamber of Commerce's advisory medical council practically declares that the management of quarantine affairs at this port is not a fit subject for indiscriminate criticism, inasmuch as "the emergency has been one of almost unparalleled magnitude, and the complication of circumstances of a most perplexing character." It is also gratifying to see such evidences of the medical profession's interest in these matters as was afforded at the special meeting of the Section in Public Health of the New York Academy of Medicine on Monday evening. Several important communications were presented to the meeting, three of which will be found in this issue of the *Journal*.

MINOR PARAGRAPHS.

THE SIMULATION OF TETANUS.

The *Montreal Medical Journal* for August refers to a case of malingering that puzzled the physicians of the General Hospital of that city for some little time. The patient feigned tetanic spasms of the head and neck, and gave a history of having cut his foot with broken glass two or three weeks before. A scar was found on the foot said to have been wounded. On examination of the neck, there was found a certain amount of stiffness, together with a spasmodic action of the muscles of the face, neck, and upper arm. The case was for a time regarded as an erratic display of tetanus, and the patient was ordered a quarter of a minim of carbolic acid every two hours. He appeared to improve. The surgeons of the hospital held a quasi-consultation over the case, and it was suggested, in the hearing of the afflicted person, that if the spasms did not speedily improve, relief could be best obtained by amputating that part of the foot in which the scar was situated. This produced a marked improvement. A few days later the man expressed himself as dissatisfied with the General Hospital and was removed to a private hospital, where his spasms were of a different character. He was seen by quite a number of Montreal practitioners, who became convinced of the fact of an imposture. Somewhat abruptly the man took his departure and is probably now trying his spasmodic arts at some other large hospital, possibly in this country.

DEATH FROM THE STING OF A BEE.

Several instances of death from the sting of a bee are on record. In an example of recent occurrence, for the facts of which we are indebted to Dr. Amos Sawyer, of Hillsboro, Illinois, the fatal result seems to have been due to an idiosyncrasy. A woman, sixty years old, was stung on the head by a bumble-bee. She called to her husband to come to her assistance and started for the house, a few feet distant. When her husband reached her she was leaning against a bedstead and asked him to lay her on the bed, as she was unable to place herself on it. He did so and, as soon as possible, gave her a large dose of brandy, but in fifteen minutes from the time she was stung she was a corpse. It is added that when she was a young girl she almost lost her life from the sting of a honey-bee, and that twice during her later life she was stung on the hand, but the arm was ligated, and no serious results followed.

A PHYSICIAN HIGHLY HONORED.

Mr. Gladstone has given a ministerial appointment to Sir Walter Foster, M. D., of Birmingham, by promoting him to the position of political secretary to the Local Government Board. This is said to be the first time in British history that an honor of this description has befallen a medical practitioner. Dr. Foster has been a member of parliament and actively interested in medical reform measures. His medical knowledge fits him for a better discharge of a part at least of his new duties in the powerful board than would otherwise be the case, and he is a favorite in his profession.

NEW DEGREES.

We learn from the *British Medical Journal* that the University of Durham College of Medicine proposes to confer the degree of bachelor in hygiene, B. Hy., and doctor in hygiene, D. Hy., instead of the diploma in public health, D. P. H., or that of bachelor or doctor in science, that are conferred, in course, by the other medical colleges of Great Britain.

A TRIBUTE TO THE PROFESSION.

In its issue for the 18th inst. the *Sun*, replying to an inquiry as to the probable cost of an examination into the mental condition of an individual, names an examiner in lunacy and says: "We do not know what expense you will be put to, but physicians are the most charitable people in the world, and no patient was ever asked to pay more than he could afford to pay."

ANOTHER RESEARCH INTO THE ACTION OF CHLOROFORM.

It is stated that Dr. Hobart A. Hare, of Philadelphia, has undertaken a new research into the action of chloroform, at the instance of the government of Hyderabad.

New Inventions, etc.

AN ANATOMICAL SPATULA.

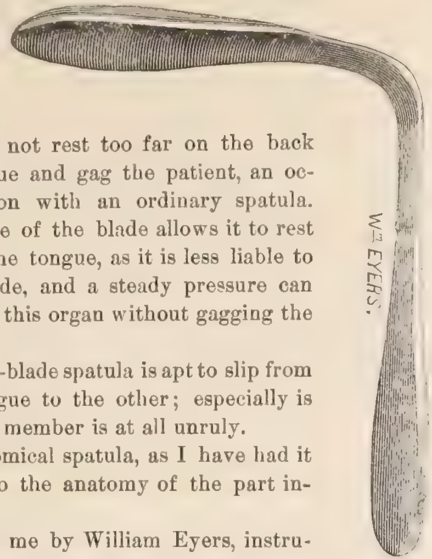
By E. Harrison Griffin, M. D.,

LECTURER ON DISEASES OF THE THROAT AT BELLEVUE HOSPITAL MEDICAL COLLEGE; ATTENDING SURGEON, THROAT AND NOSE DEPARTMENT, OUTDOOR POOR, NEW YORK.

The accompanying cut represents a little instrument I have had made to hold down the tongue in the various examinations of the throat where this is desired.

The blade of the instrument is three inches and a half in length and a little over an inch in its widest part. The lower portion of the blade is concave, so it will cover the dorsum of the tongue, which is convex.

I have made the mouth-piece out of solid metal, and done away with the fenestra so commonly found in a spatula, as the edges of this opening are hard to keep clean, and are liable to retain inoculable matter. The fenestra itself is useless, and only a trap to transplant disease.



In this instrument attention has been paid to the length of the blade, so the posterior portion will not rest too far on the back border of the tongue and gag the patient, an occurrence so common with an ordinary spatula. The concave surface of the blade allows it to rest on the dorsum of the tongue, as it is less liable to slip from side to side, and a steady pressure can thus be obtained on this organ without gagging the patient.

The ordinary flat-blade spatula is apt to slip from one side of the tongue to the other; especially is this true where this member is at all unruly.

I call it an anatomical spatula, as I have had it made to conform to the anatomy of the part intended for its use.

It was made for me by William Eyers, instrument maker, in Twenty-sixth Street, New York.

The instrument is light and easy of manipulation, and I have found it perfect for the use for which I designed it.

112 West Forty-fifth Street.

Miscellany.

Joint Disease in Hæmatophilia.—"The effusion of blood into the joints of persons with hæmorrhagic diathesis is the subject of a paper in Volkmann's clinical lectures by Koenig, of Gottingen, in which he points out that the so-called bleeder's joint is due not merely to effusion of blood into the cavity, but to irritation and a peculiar form of inflammation which leads to a permanently diseased condition, with contraction, ankylosis, and other deformities. Three stages of the disease may be distinguished—the hæmorrhagic, the inflammatory, and the retrogressive, the last producing conditions resembling those due to tuberculosis; the tendency to form abscesses and fistulæ which exists in tuberculosis is, however, entirely absent in hæmatophilia. As regards treatment, the less that is done the better. On no account should capital operations be attempted, their result being invariably disastrous; whereas, when absolute rest is maintained, and perhaps finally a simple puncture made into the joint, a successful result may sometimes be obtained."—*Lancet.*

The Limits of Medicine and Surgery in Disease of the Vermiform Appendix.—In the September number of the *Dublin Journal of Medical Science* there is an article on this subject, by Dr. Charles B. Ball. Under the names of perityphlitis and paratyphlitis, says the author, we are all familiar with inflammatory conditions of the ileo-cæcal region, but the researches mainly of the American surgeons have demonstrated that it is rarely these inflammations originate in the cæcum proper, but are due to pathological changes in the vermiform appendix. McBurney, who has done so much on this subject, puts down the proportion as ninety-nine of the latter to one of the former, while other writers of large experience deny the existence of a cæcal origin for the inflammation altogether; hence the committee of the New York Medical Society have adopted the word appendicitis, which, although not free from objection, is preferable as expressing a more accurate pathological significance. It is within the experience of us all that many of these cases get well under purely medical treatment, while on the other hand it is certain that many valuable lives are sacrificed which might have been saved by timely surgical operation; and it has occurred to me that a discussion on the limits of medical and surgical treatment might prove interesting, and be peculiarly suitable to the Medical Section of the Royal Academy. In the following remarks I will try and avoid going into purely surgical details, and will only adduce cases so far as is necessary to elucidate the subject. At the outset, I would at once disclaim against viewing the vermiform appendix with that extirpating energy which some modern gynæcologists appear to exhibit toward the ovary on the very slightest pretext; on the contrary, I believe strongly that the majority of cases of appendicitis recover well under purely medical treatment; but at the same time it must never be forgotten that even in the apparently most trivial cases urgent symptoms may at any moment become prominent, and that surgery, to be of use, must be resorted to at an early date. To leave the case until septic peritonitis has spread all over the abdomen, and until extensive meteorism has supervened from paralysis of the gut, is to consign the patient to almost certain death, as, if under these circumstances operation is undertaken, it will almost certainly be fatal, and has been well described as a premature autopsy.

The pathological processes which originate this inflammatory state are subject to some variety. In a large proportion of cases it will be found that there is present in the appendix a foreign body—this may be a fruit stone, grain of shot, or other similar substance which has escaped into the appendix from the cæcum, or an enterolith which has formed *in situ* by the concentric deposit of fæcal matter and mixed phosphates. In either case the pressure of the body may produce necrosis of the epithelial lining of the appendix, and thus allow the septic bacteria, which are so numerous in the fæces, to escape into the submucosa, and give rise to ulceration or gangrene of the appendix. There is great anatomical variability in the orifice leading from the cæcum into the appendix; in some it is well protected by a valvular fold of mucous membrane, while in others it is patulous and the valve entirely wanting. Possibly this patulous state of the orifice, which is probably congenital, accounts in some degree for the fact that this disease is one occurring in early life in the vast majority of instances. In many cases, however, no foreign body or enterolith can be found, and the cause of the initial ulceration must remain doubtful. When an ulcer or gangrene of the appendix takes place, it may be followed by plastic inflammation of the surrounding peritonæum without causing suppuration. This is what takes place in the milder cases which resolve spontaneously. In a second class of cases localized suppuration takes place, and an abscess forms which may point in the lumbar region or iliac fossa, while occasionally an intra-abdominal abscess may form, sometimes of very considerable size. In these cases the size may increase very rapidly by the development of gas, although the quantity of pus is small. There has been much contention as to whether these abscesses are intra- or extraperitoneal; it will, however, be obvious that as the vermiform appendix is entirely surrounded with peritonæum, they must in the first instance be intraperitoneal. But the distinction is not of great practical importance, because when adhesions have taken place between the coils of intestine in the immediate vicinity and the parietal peritonæum, the case resembles one in which an abscess has arisen outside the serous sac, the great bulk of the cavity remaining uninvolved, but in all probability the danger of rupture into the general cavity of the peritonæum is greater where the wall of the abscess consists of adhesions only.

Where the floor of the ulcer suddenly gives way without the previous formation of limiting adhesions, extravasation of fæces will take place and septic peritonitis be the inevitable result, the acuteness of the peritonitis, however, being usually less than when the stomach or small intestine is perforated, death not usually resulting in the former until the fourth or fifth day. Mynter has suggested as a reason for this that when the small intestine is perforated, the movement of the gut in peristalsis distributes the septic matter rapidly over a large surface of the peritonæum, while the more fixed position of the cæcum limits the peristaltic excursions of the vermiform appendix. A more probable explanation, however, is that the very small caliber of the appendix as compared with the other portions of the intestinal tract permits of only a much slower extravasation of fæces. Among the more distant results of ulceration of the appendix may be mentioned the cicatricial closure of the lumen and the dilatation of the distal portion into a retention cyst. In one of the cases recorded by McBurney such was found to be the case. A cyst so formed might, of course, at any time rupture into the peritonæum, but it is not probable that the results would be so disastrous as in primary perforation of the appendix, the fæces not being extravasated.

From the foregoing it is obvious that three clinical types of appendicitis may be recognized, and the classification of Professor With, of Copenhagen, is a convenient one:

1. Peritonitis appendicularis adhæsiva.
2. Peritonitis appendicularis localis.
3. Peritonitis appendicularis universalis.

The symptoms by which the first variety is ushered in are sudden severe abdominal pain, usually more marked on the right side, vomiting, and a considerable degree of fever. An examination of the abdomen shows that the muscles of the right side are more rigid than those of the left, and McBurney has pointed out the fact that although the entire abdomen may be painful and sensitive to the touch, one point of extreme tenderness can usually be made out if carefully examined for. For this purpose the tip of one finger only should be used, and the surface of the right side of the abdomen gently palpated. It will then usually be found that the focus of greatest sensitiveness is on a line joining the umbilicus with the anterior superior spine of the ilium, and in the adult about two inches from the latter point; this corresponds with the position of the base of the vermiform appendix. In two cases of simple appendicitis which I recently observed this proved a very definite and useful symptom. A fullness may also be detected in a few cases, but at the onset a distinct tumor is rarely to be felt. The tendency of this simple form is to rapid resolution; within twenty-four hours an improvement in the symptoms is usually noticeable, and the patient is convalescent in a few days; in some cases, however, there are frequent recurrences, while it must constantly be borne in mind that even the most simple variety may at any moment merge into one of the graver forms.

The second variety is characterized by the formation of localized abscess, and where the symptoms of the simple appendicitis do not subside in the first day or two, but, on the contrary, gradually increase, the formation of pus may be expected, and if a tumor is present and the skin becomes œdematous over the iliac fossa, the diagnosis may be made with confidence. The ordinary iliac or lumbar abscess which may ensue as a result of appendicitis possesses no very special points of interest, and all are agreed that when of large size and very obviously fluctuating it should be opened and drained in the usual manner, without any attempt to extirpate the appendix. Should a fæcal fistula ensue, it will in all probability close after a time and recovery will be complete; or if a permanent fistula remain, it may be dealt with more safely at a future date.

Where, instead of the moderate abscess occupying the iliac fossa or lumbar region, we have an intra-abdominal abscess of considerable size, the diagnosis may not be so easy, while the treatment must be prompt.

After brief mention of several illustrative cases, the author proceeds as follows:

When extravasation of fæces suddenly takes place from a perforated appendix, unlimited by adhesive inflammation, diffuse septic peritonitis is the necessary result. I am convinced that the majority of cases of so-called "idiopathic" purulent peritonitis in young people have their origin in perforation of the appendix. Such cases are to be diagnosticated by the much greater severity of the initial symptom, the frequent weak pulse, and the rapid onset of collapse and meteorism. Under these circumstances the sole chance of saving the patient's life lies in immediate laparotomy, and the surgeon who shirks this duty incurs a grave responsibility.

In conclusion, I would venture to suggest that appendicitis should be treated on the following lines: Let every case be watched with the greatest care and visited at short intervals, remembering that while the majority will probably subside spontaneously, any one may suddenly develop into the more serious forms. To stop the vomiting by withholding food by the mouth is obviously sound practice, while anodynes in small quantities by limiting peristalsis may undoubtedly be useful, but given in large doses they may be a source of real danger by masking the onset of grave symptoms which urgently demand operation. If at the end of twenty-four, or at most thirty-six, hours from the onset the symptoms are still *progressive*, the case ceases to be one of simple appendicitis, and the limits of purely medical treatment, I confidently believe, have been reached. There has, within the last few years, been accumulated abundant evidence showing that amputation of the appendix, if undertaken early, is almost uniformly successful, while the conditions found on opening the abdomen have often been such that recovery could scarcely have been hoped for by expectant treatment. By early operation the only hope is given to cases where diffuse peritonitis has commenced, and even in cases where abscess only is commencing, the patient is saved the risk of this bursting into the peritonæum and so becoming generalized, while the tedious convalescence necessary when a large abscess cavity is drained is obviated. It may be urged that by resorting to laparotomy at this early stage cases will be operated on that would have recovered spontaneously. If due care is exercised, this is not, I think, a contingency at all likely to arise, and we must remember that a carefully done aseptic abdominal exploration in skilled hands is almost devoid of risk. To have explored a case which proved to be only simple appendicitis is, in my mind, a much less serious mistake than to allow a case to drift on into hopeless septic peritonitis for the want of timely interference. Speaking from my own limited experience of abdominal section generally, I have frequently had cause to regret that I had delayed operation too long, but never that I had opened an abdomen prematurely.

The Human Sacrum.—A paper with this title, by Dr. A. M. Paterson, of St. Andrew's University, Dundee, was communicated to the Royal Society on April 18th, and the following abstract of it appears in the society's *Proceedings*, No. 313:

Owing to the now classical investigations of Gegenbaur and Frenkel, and the more recent researches of other observers, the several homologies of the vertebral column are distinctly understood. The specific or individual differences in the correlation of one region of the column to another can be adequately explained on the assumption of a suppression or excessive development of the potential costal element of the vertebral segment. This costal element may be metamorphosed in different ways to suit the needs of the animal economy, and the variations in individual cases affect the segments at the ends of a series where the vertebræ of one region possess characters resembling those of a neighboring region. This hypothesis renders intelligible not only the existence of cervical ribs, but also correlated variations of the thoracico-lumbar region and abnormities of the sacrum, differences in the number of bones, as well as asymmetry.

During recent years this aspect of the subject and numerous examples of abnormities in the arrangement of the vertebral column have been carefully scrutinized in four important monographs. Rosenberg's memoir has excited the most attention, as he has formulated the theory of a phylogenetic shortening of the human vertebral column from behind forward. He relies for his conclusions upon the examination of abnormities of the vertebral column of man and the higher apes, and the statement of Kölliker that the ilium in the process of development at first articulates with hinder segments, and gradually shifts forward along the vertebræ to be connected with segments placed more anteriorly. Thus Rosenberg regards a human vertebral column with an increased number of præsacral vertebræ as an "ancestral" form: a column with a diminution in the number of præsacral segments as a "future" form, representing a more recent phylogenetic process. Topinard has recorded a number of observations on vertebral abnormities. He considers that anomalies in the thoracic and lumbar regions may be due to excess, default, or compensatory variations; that the anomalies of the sacrum are always compensatory, depending partly upon the relation of the ilium to the vertebral column, and partly upon the atrophy and fusion of the caudal vertebræ. He thus gives a qualified support to the notion of intercalation and excalation of vertebræ, as far as the thoracic and lumbar vertebræ are concerned. Regalia and Holl both reject Rosenberg's "atavistic" hypothesis as inadequate. Regalia regards thoracico-lumbar variations as caused by correlated variations in the position and proportions of the thoracic and abdominal viscera; and agrees with previous authors that lumbo-sacral and sacro-caudal abnormities are due to alterations in the position of the ilium in relation to the vertebral column. Holl, from embryological investigations, considers that the sacrum, once formed, undergoes no alterations, and that the twenty-fifth vertebral segment is, as a rule, the first sacral vertebra from the earliest time. He also asserts that the same segment (*v. fulcralis*) has, in the great majority of cases in the adult, the main attachment of the ilium. He looks upon variations at the cephalic end of the sacrum as caused by changes in the position of the ilium; variations at the caudal end, as associated with fusion of the coccyx.

The present memoir deals with the characteristics of the human sacrum, its form and anomalies, its correlation to other regions of the vertebral column in man and other mammals, its relation to the spinal nervous system, and its ossification, especially in relation to that aspect of the question brought into prominence by Rosenberg's hypothesis. The sacral index and the sacral curve are also dealt with.

The investigations have been made in a series of 265 adult sacra and numerous fœtal vertebral columns. Of the adult sacra, 36 belonged to spines absolutely complete, and 96 to spines complete except for a deficiency of the coccyx. The material has been obtained from many sources; and I am especially indebted to Professor D. J. Cunningham, of Dublin, for the use of a large number of specimens and notes and drawings of observations made by him on the subject.

The conclusions arrived at are as under:

1. The examination of a large series of vertebral columns compels one to discard as inadequate the theory of "intercalation" and "excalation" to account for the variations in the number of vertebræ in the several regions. The hypothesis of inherent variability, of shifting of one region at the expense of another, fully explains the cases of individual variation. The changes met with may be regarded as produced, not by the sudden (and anomalous) interposition or loss of a vertebral segment, but by a conversion of the segments of one region into those of another and contiguous region.

2. (*a*) There is a marked tendency on the part of the first sacral vertebra to be liberated from the rest of the sacrum. It retains its individuality more clearly than the other vertebræ, and frequently approximates in type to the lumbar series.

(*b*) The surface for articulation with the ilium, while usually placed on the first two and a part of the third sacral vertebræ, varies considerably in position. The surface may be shifted backward or forward; and the tendency is more marked toward a shifting in the caudal than the cephalic direction.

(*c*) The surface for attachment of the sacro-iliac ligaments is generally subdivided into two or three depressions, of which that on the first sacral vertebra is, in the great majority of cases, the largest and deepest. The inference from this fact is that the first sacral vertebra has usually the greatest responsibility in supporting the ilium.

(*d*) In the vast majority of cases there are five constituent bones in the sacrum. Increase to six is much more common than diminution to four; and increase by addition at the caudal end is apparently much more common than by addition at the cephalic end.

(*e*) Asymmetry of the sacrum occurs frequently (8·3 per cent.). It occurs in two forms—as either a sacro-coccygeal or a lumbo-sacral vertebra; and in two ways, by diminution or addition at either end in the number of component bones. A sacro-coccygeal vertebra is more frequent than a lumbo-sacral; and asymmetry with addition is more common than asymmetry with diminution in the number of bones forming the sacrum.

(*f*) The examples of correlated variations of the several regions of the vertebral column indicate a greater tendency toward increase than diminution in the total number of bones. Increase is more common than diminution in the number of bones in the præsacral, sacral, and caudal regions respectively. Increase in the sacral region is more common by abstraction from the caudal than from the lumbar series. Liberation of the first sacral vertebra is more common than assimilation of the fifth lumbar vertebra; and assimilation of the first caudal vertebra is more common than liberation of the fifth sacral. With regard to the sacrum particularly, there is found to be a certain limited and inherent variability in the position of the ilium, causing it to be shifted backward or forward in relation to the vertebral axis, and more frequently backward than forward. There appear to be three separate influences acting upon the sacrum, and producing the differences in number of bones, correlated variations, and asymmetry: (1) fusion of the first caudal vertebra; (2) liberation of the first sacral vertebra, by a backward shifting of the ilium along the vertebral axis; and (3) fusion of the last lumbar vertebra with the sacrum, by a forward shifting of the iliac attachment. The first influence is most commonly seen, and may be exerted alone or along with the second. The second and third influences are opposed to one another. The former is more frequent than the latter, producing an additional lumbar or a lumbo-sacral vertebra; the latter gives rise to a diminution in the number of free lumbar vertebræ, and may be accompanied by the conversion of the last sacral into a sacro-caudal or caudal vertebra.

(*g*) A study of the ossification of the vertebral column leads to similar conclusions, and indicates the existence of inherent variability in the several regions, and a greater tendency to elongation than contraction of the vertebral column as a whole. The process of ossification also shows that the ala of the first sacral vertebra (twenty-fifth spinal segment) is usually the first to ossify; which vertebra may therefore be regarded as the one primarily responsible for the attachment of the ilium. The exceptional cases occur in sacra showing correlated variations or asymmetry, and indicate a greater tendency on the part of the ilium to be shifted backward and forward.

(*h*) The evidence derived from a consideration of the vertebral column in other vertebrates is unsatisfactory. The human spine holds, with regard to correlated variations, a position intermediate between anthropoid apes (in which they are very frequent) and quadrupeds generally (in which they are rarely present); while asymmetry, especially of the sacrum, may be looked upon as an essentially human characteristic.

(*i*) The examination of the correlation of the spinal nerves and limb-plexuses with the vertebral segments shows both specific and individual differences in this respect. The individual differences may be classified under three types: (1) A variation in the arrangement of the nerves without any concomitant variation in the vertebral column; (2) a variation in the vertebral column without any concomitant variation in the nerves; and (3) a coincident variation in both nervous system and vertebral column. These varying relations of the nervous system to the vertebral column diminish the value of the spinal nerves in the determination of the serial homologies of the vertebral segments. Further information as to the relative frequency of abnormities in the disposition of the spinal nerves in the limb-plexuses and the relative frequency of the various modes of correlation of the spinal nerves and vertebral column is required before adequate conclusions can be formulated on this point. One can only indicate the striking fact that all the examples of variation in the arrangement of the spinal nerves in man and anthropoids are examples pointing to an extension *backward* of the limb plexuses, by the entrance into them of post-axially placed nerves. The evidence of the nervous system favors, therefore, the view rather of extension backward than forward of the limbs in relation to the vertebral column, so far as present knowledge enables us to judge.

When all these points are considered together—the cases of liberation of the first sacral vertebra, the mode of articulation of the ilium; the form of the ligamentous surface and the number of bones forming the sacrum; the correlated variations; the examples of asymmetry; and the evidence derived from a consideration of the vertebral column in other vertebrates, of the correlation of the nervous system and the vertebral column, and of the development and ossification of the vertebral column in man—the array of facts presented does not afford much support to the theory of a phylogenetic shortening of the vertebral column advocated by Rosenberg. The conclusion to which these facts lead is rather that there is in the human vertebral column a certain limited variability in the correlation of the several parts. The actual variations met with may be in the direction of elongation or abbreviation of a particular region, and more often produce elongation than contraction of the præsacral region. There is no evidence to show that any definite process of either shortening or lengthening of the vertebral column is going on phylogenetically. The variations found are apparently individual peculiarities, which, however, taken together, indicate a tendency to elongation rather than contraction of the præsacral region.

At the same time, these investigations give support to the view put forward by Rosenberg and Topinard, that a process of fusion of the rudimentary caudal vertebræ with the sacrum is going on in consequence of the immobility of the caudal appendage, and resulting in an increase posteriorly of the number of sacral vertebræ and a diminution, *pari passu*, in the number of free caudal vertebræ.

3. The sacral index was computed in a large number of cases, including 100 Europeans, 20 Andamanese, 9 negroes, 10 ancient Egyptians, 5 Hindoos, 8 Australians, and a small number of examples of several other races. The results obtained were compared with those given by Professor Sir William Turner in his monograph on the Human Crania and Bones of the Skeleton, collected during the voyage of H. M. S. Challenger.

The mean index calculated from the two series of observations, disregarding sex, is 106·7; of the males alone, 103·5. The human sacrum is thus generally broader than long, as already known; and the female sacrum is relatively broader than the male.

The races dealt with may be divided into three classes: (*a*) Those distinctly *dolichohieric*, with a sacral index below 100, including the Kaffir, Hottentot, and Bushman. (*b*) Those which may be called *sub-platyhieric*, with an index between 100 and 106, including the Andamanese, Australian, Chinese, Tasmanian, and negro races. (*c*) Those which are clearly *platyhieric*, with an index over 106, including American, ancient Egyptian, Melanesian and Polynesian, Hindoo, European, and other races examined.

4. The sacral curvature was examined in 236 cases, of which 82 were males, 38 females, and the rest of unknown sex. The curve is generally deepest opposite the third sacral vertebra, and is more deeply curved below than above that point. It is not an equal and uniform curve, but is flattened above, and possesses a more pronounced curvature below the third sacral vertebra. This occurs in both sexes and in all races. A promontory between the first and second sacral vertebræ occurs frequently, in the majority of cases in association with an additional sacral vertebra, and more often in the male than in the female.

The female sacrum is more frequently curved more deeply in the upper part of the bone than the male sacrum.

The actual depth of the curve—that is, the amount of curvature—is greater in the male than in the female, irrespective of the absolute *size* of the sacrum. The amount of curvature is greatest in the European races, and, apparently, greater in the European and Mongolian races than in the negro and Polynesian.

Epistaxis.—In a paper read before the South Australian branch of the British Medical Association by Dr. T. K. Hamilton, honorary physician to the throat department of the Adelaide Hospital, and published in the August number of the *Practitioner*, the author says: This subject, hæmorrhage from the nose, may appear a rather commonplace one to bring before the association, but, as I have observed that, frequent as epistaxis is, and accurate as our knowledge nowadays is of the general and local conditions giving rise to it, the more direct and rational methods of dealing with nasal hæmorrhage are still less frequently adopted than they might be, and the rather old-fashioned routine of plugging the nostril and thus, as it were, stopping the bleeding in the dark, is resorted to with unnecessary frequency. The improved modes we now have of examining the interior of the nose, and dealing with all intranasal diseases in detail, have brought hæmorrhages, alike with all other departures from the normal condition, well within the range of direct surgical treatment; and plugging the nostril for an ordinary hæmorrhage which has resisted the usual remedies, without first of all making some reasonable attempt to ascertain where the bleeding is coming from, what its nature is—arterial or venous, etc.—seems to me to be as irrational a mode of procedure as if a surgeon were to plug, for example, a bleeding wound in the leg without first trying to pick up the offending vessel and deal with it directly by torsion or ligature. My principal object, therefore, in reading this paper is to emphasize the importance of a systematic examination of the nasal cavities in all cases of epistaxis, where such examination is practicable, before any treatment is commenced.

The observations I have been enabled to make have been on cases arising for the most part from local lesions and traumatism, including operations, and, in order to put them in some practical shape, I purpose dealing first with the hæmorrhage itself and its origin; second, with the local causes and conditions which favor its occurrence; and third, with the best methods of dealing with it.

The *source* of hæmorrhage is, in a very large percentage of cases, from the sæptum, and for the most part the hæmorrhagic areas are within easy reach. Lennox Browne says: "Bleeding from the nasal cavities, uncomplicated by evident rhinal disease, is, in my experience, nearly always from the artery of the sæptum, and at a spot at the anterior part of the sæptum where this artery joins with the ascending branch of the descending palatine artery near the anterior palatine canal." Most authorities agree with this statement; Morell Mackenzie, strange to say, is one of the very few who disagree. He states that the most frequent site of the hæmorrhage is to be found on the outer wall of the nose. All the cases I have seen have been, without exception, from the sæptum. The turbinate bones do not seem to be more prone to hæmorrhage than any other portions of the nose not composed of erectile tissue; and it is worthy of note that hæmorrhages are extremely rare from that particular spot on the sæptum where erectile tissue is found—namely, the tubercle. Again, operations on the erectile structures are not usually attended by much bleeding unless some of the bone itself be removed.

Next, as to the *causes and conditions* which favor hæmorrhage from the sæptum. In the vast majority of cases the hæmorrhage is from blood-vessels ruptured either by traumatism, by an erosion, or by an ulcerative process. The traumatic cases are either from direct injury or the result of operations; here the cause is self-evident, and the conditions alter according to the circumstances of each case. It is morei nteresting to note the causes which lead to erosion and ulceration. Deformities of the sæptum in the way of deviation to one side are of very frequent occurrence. The projecting portion becomes the seat of a slight erosion, probably as the result of attrition by the dust-laden current of the inspired air; in this manner the walls of the blood-vessels become thin, while at the same time the eroded surface forms a site for the formation of dry crusts—*rhinitis sicca*. When these crusts are frequently and forcibly removed with the finger-nail, as is the habit, hæmorrhage is very liable to ensue.

Again, spurs or ecchondroses are often found growing from this part of the sæptum, and they, from their very growth, tend to attenuate the mucous membrane, their apex becomes the seat of dry incrustation, and eventually a breach of continuity takes place, from which here also bleeding is apt to occur. I have a case at present under observation in which there has been profuse hæmorrhage from the left side of the sæptum, an ecchondrosis has formed just behind the bleeding spot, and its surface is thin and contains varicose vessels, which have doubtless contributed to the bleeding. In cases such as this, more particularly in young people, there seems to be a condition of overnutrition of which the hæmorrhage is the outcome. It has been observed that periodical bleedings tend to retard the growth of these spurs, and, again, that they take on more active development when, for some reason or other, the depletion ceases. I have placed on record one remarkable case of this kind in which, after the cessation of frequent hæmorrhage, a large spur commenced to grow and to produce most extraordinary reflex nervous phenomena, for the relief of which it became necessary to remove the growth. This overnutrition theory accounts for the nose bleedings which frequently occur in children who have post-nasal growths, these growths being in themselves the outcome of excessive nutrition in the naso-pharyngeal cavity. The histological structure of cartilage, and particularly of the hyaline variety, such as we find in the triangular cartilage of the sæptum, helps to explain the formation of these spurs from this point of view; for, as the blood is supplied to the cartilage by loops of vessels dipping into the substance from the perichondrium, and the nutrition of the cells is carried on by osmosis from one to the other without the intervention of a capillary network of blood-vessels, we can easily see that a localized increase of blood-supply to these loops must necessarily give rise to a more rapid cell division and proliferation of the intervening cartilage cells than is required to supply the waste of cell death, and localized increase of cartilage tissue must result therefrom. Observe, then, the sequence of events leading up to the hæmorrhage—overnutrition, increased development, erosion, and weakening of the superficial vessels.

If the erosion go on, as it sometimes does, to ulceration, then perforation of the sæptum may result. The center of the triangular cartilage is its thinnest part, and if ulceration commence there it is extremely likely to produce perforation if not arrested by treatment. Prolonged irritation will, of course, increase the risk of perforation. As an instance of this the frequency of perforation of the sæptum among workers in cement might be cited; it is believed that the dry cement dust accumulates in the nostrils, necessitating the frequent use of the finger to remove it, and this predisposes the workers to the lesion in question.

In addition to perforation of this kind from gradual erosion, there seems to be yet another variety not depending on any external irritation, but resulting, according to several authorities, from a thrombosis of an artery analogous to what occurs in ulcer of the stomach. This is probably the form of perforation of the sæptum referred to by Voltolini as a "hæmorrhagic ulcer." These perforations are quite distinct from those due to syphilis, which is itself a well-recognized cause of perforation of the sæptum; but epistaxis is, as Bosworth points out, a rare symptom in specific ulceration, as also in tuberculosis, for the ulcerative processes in these affections rarely invade the blood-vessels. I have found bleeding occur from the raw margins of a specific perforation, but it is usually moderate in quantity.

As to the *kind* of hæmorrhage, it is, I believe, more frequently arterial than venous; the troublesome bleeding which sometimes follows the removal of an ecchondrosis or exostosis with the knife, gouge, or saw, is arterial, and I have several times seen a hæmorrhage commence spontaneously, continue off and on for days, and when an examination is made, seem to depend on a very small spouting vessel not larger than a very fine pin in caliber.

Lastly, as to the best *methods of dealing* with the hæmorrhage. All modern authorities agree in impressing the necessity of a thorough examination of the nasal cavities to ascertain, if possible, the exact position and nature of the hæmorrhage before any treatment be adopted. Greville MacDonald says: "Objective examinations with the speculum in a good light should never be omitted in any case of severe epistaxis, for by this means the bleeding points may be dealt with, while failing this the nose may be plugged with the minimum amount of discomfort to the patient." Cresswell Baber, Voltolini, and others insist on the same. When the examination is made, unless the bleeding be very profuse, or the surface from which it comes be large, as it is, for example, when a long spine is sawed off the sæptum, we can nearly always find the exact spot from which the bleeding is coming, and then *the* treatment, in my opinion, is the application of the galvano-cautery point, not at too white a heat. This treatment is recommended by Chiari. The application should be thorough, and, in the case of ulcer, to the margins as well as to the floor. The cautery I have found prompt and effective in putting a stop, once and for all, to a hæmorrhage of perhaps days' or weeks' habitual recurrence.

In those cases where the hæmorrhage is very profuse and we can not find the bleeding point, which for practical purposes are usually surgical ones, we must proceed to use other means. Let us assume, for the sake of illustration, that the case is one of operation for the removal of a spine from the sæptum: we have used cocaine prior to the operation; its effects have passed off, and the hæmorrhage still continues unabated; and here let me remark, in passing, that as cocaine temporarily empties the blood-vessels it is not until its effects have quite passed off that we can tell what the real amount of hæmorrhage is going to be; for this reason it is best to keep your patient under observation in all cases, even though the operation be a trivial one, until a half-hour or so of the cocaine anæsthesia has elapsed. The necessity for this precaution has been forcibly impressed on my mind by the following incident: I had removed an ecchondrosis from the sæptum for a young lady with the cutting gouge, and there was no hæmorrhage to speak of. Some weeks subsequently, during very hot weather, I found it necessary to divide a small synechia connected with the original growth. It was not thicker than a small quill, and one snip or two of the scissors was sufficient to divide it. There was little or no hæmorrhage at the time, and, as the day was very hot, I allowed the patient to leave my rooms immediately after the operation. She went home; hæmorrhage set in, and became so profuse that she had to have the nostril plugged to arrest it. Evidently the synechia, small as it was, contained a vessel which kept on bleeding.

To return. Having disposed of the cocaine anæsthesia, and the hæmorrhage still persisting, the next step probably should be to *irrigate with hot water*, using the continuous douche. The nose is very tolerant of hot fluids, and temperatures ranging from 127° even up to 140° F. can be borne. This clears away all imperfectly formed clots, and thus favors the firmer coagulation of the oozing blood. The addition of *iodine* to the water in the proportion of 1 to 10,000 has been highly recommended, not only to make the fluid antiseptic, but as a hæmostatic, since iodine is said to check parenchymatous hæmorrhage from recent wounds.

This having failed, *peroxide of hydrogen* might be tried. Phillips (New York) has found it very useful for arresting hæmorrhage immediately after an operation. The undiluted solution should be sprayed into the nose. It is a most powerful germicide, and when mixed with the blood forms a firm clot, which, by its pressure, controls the bleeding. The only difficulty attending its use is that it is hard to get and keep it pure.

Antipyrine has of late come into notice as a hæmostatic, and, in my hands, has frequently given most satisfactory results. It has been recommended for nasal hæmorrhage by Lavrand and Hénocque. The latter ascribes antiseptic as well as hæmostatic properties to it, and thinks its action favors cicatrization. It may be used in solution prior to and during the operation, and in solution or the powder itself subsequently. I have had a wool made by soaking absorbent cotton in a saturated solution of the drug, and it seems to answer well and to possess in a high degree the properties ascribed to it.

The *acetotartrate of aluminium* is another drug which has recently come into quite general use by rhinologists. It was first recommended by Schäffer, of Bremen, and Lange, of Copenhagen; and Douglas (New York) has lately described its use as a hæmostatic. He uses a twelve-per-cent. solution on cottton-wool to plug the nostril with, and the plug can, he says, be safely allowed to remain in the nose for from two to four days, and then the pledgets will be inodorous when removed, thus proving the salt to be possessed of important antiseptic properties. My use of this drug also has been attended with satisfactory results.

Perchloride of iron is now mentioned only to be condemned for intranasal use. Iron, as we know, forms with blood a very disagreeable mass, and one also through which, it is said, blood will flow; besides, hæmorrhage frequently recurs when the plug is removed, from the tearing of the mucous surface to which it is adherent. Powerful astringents, such as the perchloride, have also been credited with causing anosmia, and even contributing toward more serious results, such as perforation of the sæptum and middle-ear inflammation.

The last astringent to which I shall refer, and in my experience sometimes the most efficient of all, is *matico.* Greville MacDonald recommends a powder of equal parts of powdered matico leaves and starch. I have found this or the plain powdered matico most valuable in stopping an inveterate and persistent oozing when other remedies have been tried in vain.

There is yet one other means which may be tried before plugging is resorted to, and that is *pressure.* When the source of hæmorrhage is near the front, a pledget of lint can be inserted into the nostril, and continuous pressure made with the finger on the outside of the nose. To meet the requirements of such a case Jarvis has devised a small clamp for the sæptum, which is very convenient and useful (exhibited).

If all the foregoing measures fail to arrest or markedly modify the severity of the hæmorrhage, *plugging the nostril* should be resorted to before the constitutional symptoms of excessive loss of blood supervene.

It will be found that the posterior as well as the anterior plug will, in such cases, usually be necessary. This applies more particularly to the cases in which operations have been the cause, because then the lesion is extensive, and often extends some distance back into the nostril. Having determined to plug, how shall we proceed? It is of the greatest importance both for the safety and comfort of the patient to attend to certain details in the application. The nostril is first thoroughly douched with hot iodized water until all clots are removed, then an instrument is passed down the nostril so as to insert the posterior plug first. For this purpose a soft rubber-catheter is much preferable to

Bellocq's cannula. This latter is an awkward and cumbersome device, and usually constructed with a curve inappropriate for insertion into the nasal cavity; besides, the nostril is not at all tolerant of metallic instruments, as they wound the sensitive mucous coverings of the turbinate bodies; so, for ease in introduction and comfort to the patient, the soft-rubber catheter is much the best. If there be any obstruction in the nostril it may be necessary to introduce a stylet into the catheter to get it passed down the inferior meatus. This can be easily withdrawn when the instrument reaches the naso-pharynx, and when the catheter is seen in the pharynx a forceps is used to seize it and pull it forward with its thread into the mouth.

Of all materials used, *iodoform gauze* seems to me to be the best for making the plug. Gougenheim recommends it and says that in his hands it, being antiseptic and hæmostatic, gives the best results. Gauze is softer, more elastic, and more adaptable than wool or lint, and when the plug is medicated with iodoform it can be left *in situ* with perfect safety two or three days. This is a very decided advantage. Having inserted and fixed the posterior plug in the usual way, we next proceed to fill up the anterior part of the nostril. Here again iodoform gauze is the best material to use, and for ease of insertion and subsequent removal nothing can surpass a continuous strip of the gauze for this purpose. Any one who has once tried this continuous plug, after having used pledgets of wool or lint, will never use anything else. It is so much nicer in every way; ever so much more pleasant for the patient; and one other very great advantage it possesses, you can remember the number of strips inserted, and when you come to remove them you can make sure that none are left behind. This method of plugging the nostril back and front is obviously such a distinct advance on other methods, such as filling up the nose with lint saturated with perchloride of iron, etc., that I need not stop any longer to dilate upon its manifest advantages. The plug thus inserted can be left in the nostril for two or three days if necessary, and when it is time to remove the anterior part a spray of cocaine, applied before each strip is withdrawn, facilitates the removal.

Occasionally, when one nostril is plugged tightly the other side of the sæptum begins to bleed, and it may be necessary in severe cases to plug the other nostril too. I have had an instance of this lately—a case of hæmophilia, in which there was the most persistent and alarming hæmorrhage I have ever seen. I had removed an exostosis from the sæptum with the saw. The growth was very large, and almost filled up the whole of the inferior meatus. Hæmorrhage commenced so soon as the effects of the cocaine had passed off, and continued, despite all remedies, until it became necessary to plug anteriorly and posteriorly. Then the other nostril commenced to bleed. It was similarly plugged, and then again on the side first plugged bleeding began through the lower canaliculus—a complication quite novel to me—and after that oozing from the soft palate, gums, etc., set in. A second plugging some days after the removal of the first became necessary for recurrent hæmorrhage, and it was only with great difficulty that the patient's life was saved. My experience of this case has taught me the extreme risk of intranasal operations in a hæmophilic subject, and I would hesitate before undertaking a similar operation again under similar circumstances.

When plugging of the nostril is carried out on the above-mentioned plan, the dangers connected therewith are reduced to a minimum; but as there have been some instances recorded of suppurative otitis, and even meningeal inflammation, following the use of the posterior plug, it behooves us to be cautious and not undertake the operation lightly or resort to it unnecessarily. Gellé, at a recent meeting of the Society of Laryngology in Paris, recorded several cases of middle-ear inflammation and cerebral complications after plugging of the posterior nares, and asserted that posterior plugging is dangerous, not only to the ear, but to life itself. In the discussions that followed, the dangers were admitted as real, but all seemed agreed that the precautions to which I have referred—for instance, careful antisepticism, not leaving the plugs in the nostril too long, etc.—protected the patient, so far as anything could, from untoward results.

In conclusion, I would refer to one of the opening remarks of my paper, and *à propos* of it to point how unjustifiable it is to submit your patient to the risk of an operation which may impair his hearing and even jeopardize his life, before you have exhausted the means within your reach to ascertain by the proper methods of examination whether any operation, such as plugging, be necessary at all or not; for it is now known that a more thorough examination to find out the exact cause and position of the bleeding lessens very considerably the proportion of cases in which plugging is necessary or advisable.

The Pan-American Medical Congress.—The committee on organization will issue the preliminary announcement of the congress within a few weeks. This announcement will show that the organization has been perfected in almost every colony and country of the Western Hemisphere. The local medical societies in each of the constituent countries are made auxiliary to the congress, which will be held in Washington on September 5, 6, 7, and 8, 1893. Dr. C. A. L. Reed, of Cincinnati, secretary-general of the congress and chairman of the committee on organization, announces that, after extended correspondence between himself and Dr. Maragliano, of Genoa, secretary-general of the International Medical Congress, the date of the Rome meeting has been finally and definitely set for September 24th of next year. This gives an interval of sixteen days between the Washington and the Rome meetings, during which time an easy trip can be made from the former to the latter city.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

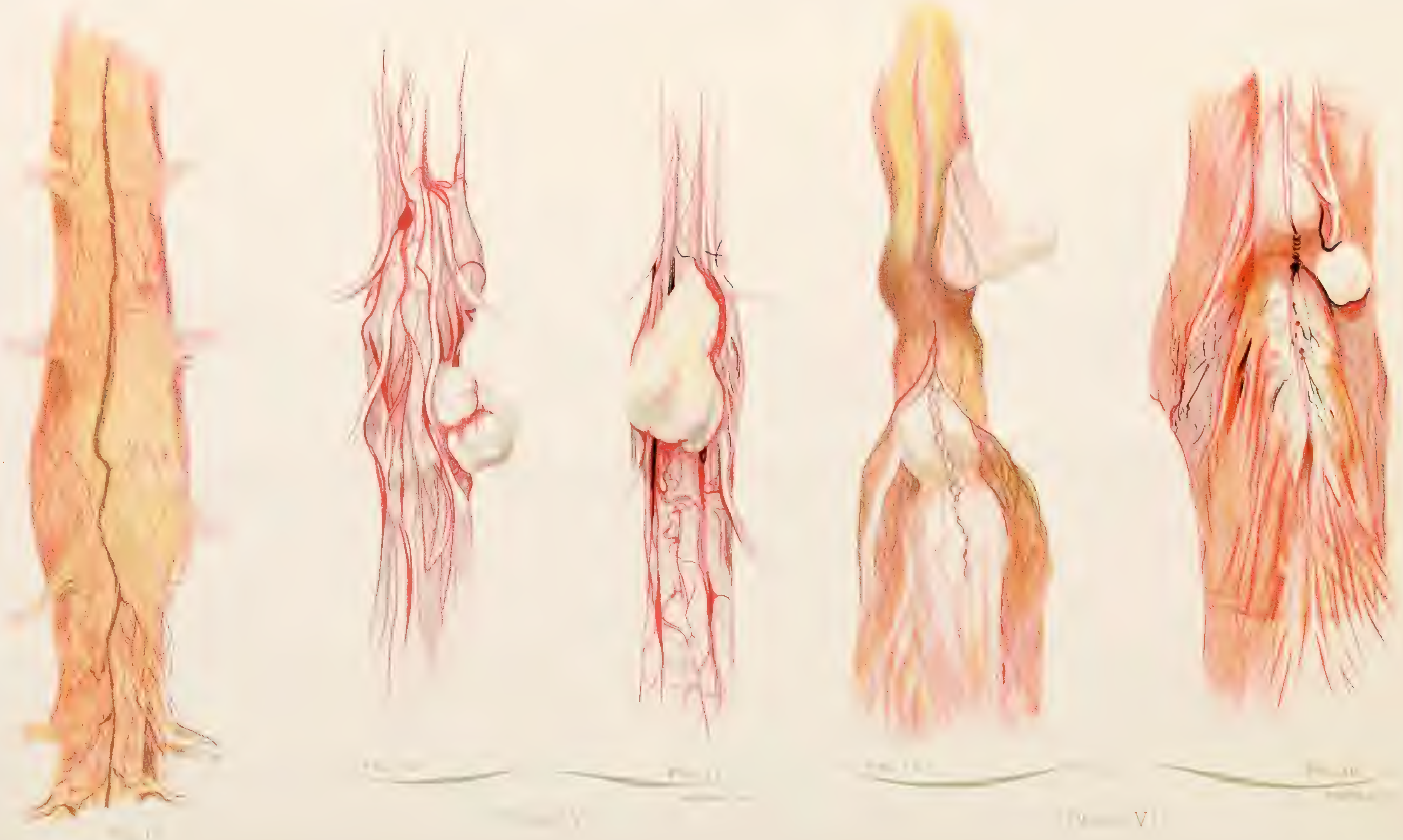
All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.



[illegible] DR. VAN GIESON'S ARTICLE.
A STUDY OF ARTEFACTS OF THE CENTRAL NERVOUS SYSTEM. [illegible] OF THE SPINAL CORD.

PLATES IV–VI.

Normal spinal cords in the fresh condition, showing effects of the more severe bruises which may occur in the technique of removal at the autopsy. These artificial appearances are quite generally mistaken for malformations, tumors, or other lesions of the spinal cord, but are produced unawares at the autopsy by bruising the cord with instruments (chisel, mallet, osteotome) or fragments of bone.

PLATE IV.

Fig. 16.—Shows the very perfect simulation of the fresh gross appearances of acute myelitis by an accidental autopsy bruise of the lower dorsal region of the spinal cord of a horse. The bruise inflicted by autopsy instruments has produced a soft, pulpy, fusiform swelling of the cord with a trifle of flattening. This drawing was originally made two years in advance of these researches, in 1887, to show what was then supposed by the writer to be a focus of acute myelitis with softening in a horse having partial paraplegia. The bruise inflicted at the autopsy by the author was wholly unappreciated until the case was latterly re-examined in conjunction with experimental cord bruises, when the characteristic artificial changes of bruising were understood and the cord tissues found to be perfectly normal.

PLATE V.

Showing results of attempts to produce artificial duplication of the human spinal cord. Each of these two portions of the cord, after careful removal, was bruised by bimanual pinching with the fingers on either side of a given point. In this way portions of the cord were transported or telescoped to other levels.

Fig. 17.—The displacement of the cord substance by the bruise has produced a hard, lumpy swelling in the upper portion of the cord, while below a portion of the cord has been thrust out laterally through the pia mater. (For microscopical appearances, see Plate XV, Fig. 62.)

Fig. 18.—A portion of white matter from a contiguous level has been extended over the anterior surface of the cord. The deficiency corresponding to the extruded portion was not pronounced in this case. (For microscopical appearances, see Plate XV, Fig. 63.)

PLATE VI.

Human spinal cords severely bruised by careless technique in removal at the autopsy.

Fig. 19.—The cord has been struck so forcibly with the chisel that a portion of it has been forced out through the dura mater. (For microscopic appearances, see Plate XV, Figs. 64, 65.)

Fig. 20.—The cord was injured by driving down fragments of the vertebral arches into the vertebral canal with the chisel and mallet. The deficient indented region of the cord indicating the source of the lateral extended portion—a rather characteristic feature of severe bruises—is to be noted.

Note.—*The figures in these plates should be numbered 16, 17, 18, 19, 20, as in the descriptions, in order to make them conform to the references in the body of the article.*

THE NEW YORK MEDICAL JOURNAL, October 1, 1892.

Original Communications.

A STUDY OF THE
ARTEFACTS OF THE NERVOUS SYSTEM.

The Topographical Alterations of the Gray and White Matters of the Spinal Cord caused by Autopsy Bruises, and a Consideration of Heterotopia of the Spinal Cord.

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(*Continued from page 346.*)

Section IV.

DESCRIPTION OF THE APPEARANCES OF NON-INTENTIONAL BRUISES OF THE CORD, SELECTED FROM ORDINARY ROUTINE AUTOPSIES.

These cases have been found in examining a laboratory collection of spinal cords comprising about seventy-five cords removed in the last fifteen years for suspected lesions, and about twenty-five or thirty normal cords. These have been removed by the dorsal method, and, as a whole, the collection has been very skillfully removed, as shown by the small percentage (about ten per cent.) of contused instances found.

It seems wise, before dealing with the experimental bruises of the cord, to describe these cases, because just such instances as these, bruised entirely unawares at the autopsy, must form a certain proportion of cases in any extensive laboratory collection of spinal cords, and they seem to be found accidentally from time to time in the course of microscopical examination, and are described as malformations.

Case I. Figs. 1, 2, 3, 4, 5, 6, Plate I.—This case first enlisted my attention to the subject of bruise artefacts, and the cord was sent to the writer for examination by Professor Hun, of Albany, in 1887. The clinical history does not relate in any way to the changes in the cord which have been produced by accidental bruising, but an abstract is given, so that the reader may not have to take this assertion for granted.

The cord was taken from a man, aged thirty-eight, who had no bodily deformities. "Symptoms began in 1882 by tingling, heaviness, and awkwardness in the right leg. In 1883 same symptoms in the right arm. Symptoms grew worse, and in 1884 incapacitated him for work. The peculiarity of the symptoms was that he could perform automatic movements well, but voluntary movements only very imperfectly. In walking, the right leg seems rigid and drops a little, but he can run well and swiftly and can jump over a chair after a fashion. The patient explains this by saying that in running he gets his mind off the leg, but when he gives his attention to the leg and tries to walk, walking becomes very difficult.

"When asked to flex his left arm at the elbow, the biceps contracts firmly; when he tries to do the same with the right arm, the biceps contracts feebly at the first attempt, and at each subsequent attempt contracts more feebly and the arm is thrown into a tremor, until after three or four attempts it does not contract at all. When he tries to put his hand on the top of his head, the first attempt succeeds well, but on the second and third attempt the hand trembles very violently and the movement becomes weak, and finally impossible. When resistance is offered to any of these movements, even when he can no longer make them without such resistance, the contraction becomes very strong and the patient's strength increases with the resistance offered.

"In the same way, when the patient grasps the experimenter's hand with his right hand, the grasp is weak when no resistance is offered, but when the experimenter returns the grasp strongly, then the patient's grasp becomes so strong as to cause much pain—indeed, unbearable pain—in the experimenter's hand. It seemed as if the resistance called forth strength in a reflex way, which the volition of the patient could not produce.

"Sensibility of arm and leg normal. Much twitching of muscles of body, especially on right side.

"These symptoms were present in the early part of December, 1886; in the latter part of December he began to fail and lose flesh rapidly, and died January 3, 1887."

The *autopsy* was made sixteen hours after death and contains these notes about the brain and cord:

Cerebral dura and pia mater normal. An unusually large vein containing a white coagulation, apparently of post-mortem origin, ran up in the fissure of Rolando on the left side. Brain otherwise normal. Spinal cord seems softer than normal, *especially in lower part, and the gray matter in certain sections seems unequal* on the two sides, sometimes in the posterior, sometimes in the anterior horn. Especially in the dorsal region the right anterior horn seems smaller than the left."

There was nothing abnormal about the other organs and no malformations were found anywhere in the body.

I did not see this cord until after the hardening was completed, and can not describe the fresh gross appearances, and there are no notes in the autopsy record about any accidental bruising of the cord, but the hardened specimen showed a contusion in the dorso-lumbar junction. Here the cord was much enlarged, the enlargement being fusiform, and in places the white matter has been thrust out through splits in the pia mater and nodular and diffuse portions of it appeared uncovered on the surface of the cord. This contusion involved the twelfth dorsal and first lumbar segments. The transverse enlargement in the bruised place was about one and a half times the normal diameter of the cord in this region. I afterward learned from Professor Hun that the bone-shears had been used freely in getting out the lower portion of the cord, which explains the occurrence of the dorso-lumbar contusion.

Above and below the bruise the cord is not much smaller than usual in its gross appearances, whereas generally the enlargement of the cord from a bruise is at the expense of the contiguous portions.

The asymmetries of the gray matter described in the autopsy notes are also indicative of blows more diffuse and less violent in their effects than in the large circumscribed bruise in the dorso-lumbar region. In the hardened cord there were also places where the cord substances, particularly the white matter, had flowed out from or had been thrust up by pressure out of the transverse incisions. Beyond the features of the lumbar bruise, the external gross appearances were perfectly normal.

Microscopical Examination of the Dorso-lumbar Bruise.—Fig. 1, Plate I, shows the appearance of a section of the cord in the uppermost level of the bruise. A portion of the white matter has been thrust up from below by the force of the blow and splits open the right posterior horn. The fibers of this displaced white matter in the posterior horn do not run vertically, but are crushed up together in a confused mass, with the majority of the fibers running for a short distance parallel to the plane of the section. The axis cylinders of this displaced white matter are distinct, but the myeline of the fibers is badly disintegrated, so that the area stains a trifle lighter than the surrounding normal white matter.

Fig. 1, Plate I, should be compared with Fig. 24 (Plate VII), in which the cord was bruised intentionally with the production of results quite similar to those shown in Fig. 1. Fig. 24 shows macroscopically the actual transit of a mechanically displaced column of white matter, and how it splits open the anterior and posterior horn which are shown in section in Fig. 1.

Another portion, apparently, of this displaced column of white matter radiates out from the outer segment of the split horn to the periphery of the cord, the fibers running horizontally. A few of these latter fibers in other sections break through the superficial neuroglia and pass outside of the cord, and correspond to the extraneous portions of white matter noted in the gross appearances of the bruised region.

A few millimetres below the level the bruise has dispersed the cord substances as shown in Fig. 2, Plate I. Here the horns on both sides are split open by displaced columns of white matter driven from other levels into the gray matter. The right posterior horn resembles its arrangement in Fig. 1, but in Fig. 2 it is not only split open, but the two split portions are thrust widely asunder, more or less surrounded by bands of horizontal and oblique white fibers dispersed from other levels by the force of the blow. The whole section shows scattered bands of such misplaced fibers. The columns of Clarke are indicated at *c*.

The two next lower levels are shown successively in Figs. 3 and 4, Plate I. In both of these levels the distortions of the topographical relations of the gray and white matter are more complex. In both sections the same scattered crushed columns of white matter from other levels are present. In Fig. 4 an extra anterior horn on the left side appears to have been thrust up from below. An extra portion of an anterior horn of apparently similar origin is also seen in Fig. 3. Fig. 3 shows also how the dispersed columns of white matter have deflected the posterior sæptum, and have passed across the posterior horns, separating them from the anterior horns.

These drawings show the general characteristics of a moderately extensive bruise of the dorso-lumbar region.

Fig. 6, Plate I, from the same case, shows the appearance of a section where the cord substances have flowed out slightly from the cut surface of the fresh cord. This happens quite frequently and the resulting topographical alterations are quite constant. The anterior horns are liable to be stretched out to the periphery of the cord, and are surrounded by a wreath of horizontal white fibers, radiating out to the periphery. In this section the right anterior horn is stretched out nearly to the periphery, and a band of white fibers have flowed up from the interior of the cord, and, encircling the distorted horn, pass out horizontally to the periphery. On the left side some extruded white fibers pass out over the pia-matral covering. This appearance at the divided ends of the segments where the cord substances have welled up out of the interior of a soft cord is very superficial. A slight distance below the surface the cord becomes normal.

Fig. 5, from the same cord, some distance above the dorso, lumbar bruise, shows a distortion of the gray anterior horns-the artificial nature of which is betrayed by the horizontal radiating bands of dispersed white matter on either side near the periphery. This section was also taken near the cut surface of a segment where the substance had welled up out of the cord. The changes are similar to those shown in Fig. 6.

A curious porous condition of the right anterior horn is shown, the exact nature of which we have postponed for description in a subsequent paper. This place looks as if a portion of the gray matter had been dissolved out or had been thrust away to some other level in the cord. This condition is an artefact and is frequently met with in bruised cords, especially when instruments have suddenly cut or torn in the gray matter in connection with the bruising.

No changes were found in the central nervous system of this case except the artefacts.

Case II. Fig. 7, Plate II.—The section from which Fig. 7 is taken was loaned by Dr. Ely. Although the case came from one of the foreign laboratories, where the deformity was discovered by accident in the course of microscopical examination, and was then labeled "congenital malformation of the spinal cord," we have taken the liberty of noting the case in its proper light.

This case, like the previous one, is most plainly due to bruising or manipulation, although we have only a single section to judge by, and no notes of the autopsy. The element of bruising is shown by the dispersed and crushed columns of white matter, as in the previous case, and these are indicated by the dotted lines in the drawing. Most of the left posterior horn with its medullary cone and its column of Clarke is dislocated by the force of the blow from its normal site, and is driven out into the anterior fissure.

Some experimental distortions will be shown later, resembling this case quite closely.

Case III. Fig. 8, Plate II.—This section is taken from a case of traumatic tetanus which shows a number of minor deformities of the artificial class. There are no notes about any special features of the removal of the cord at the autopsy. The cord seemed normal grossly except in one place, where the partly detached dura mater was wrapped and tied about the cord, apparently in the fresh condition or during the hardening. In this place the cord is constricted, while above and below it is slightly enlarged.

Fig. 8 is from a section, some distance from the constricted region, taken from the cut surface of a segment, in which the cord matters oozed out while in the fresh condition. In a general way, the appearances resemble those already shown in Figs. 5 and 6, taken from similar places. The anterior horns extend out to the surface of the cord, and the posterior horns are artificially misplaced and malformed. Columns of deviated white matter are also present in the section, but are not shown in the drawing. The general outline of the section also indicates rough handling. Whether the changes are due to the constricting band of the dura mater or bruising at the autopsy, or both, is hard to say.

The appearances of the sections 5, 6, and 8 should be held in mind to compare with a case described by Buchholz as congenital malformation, referred to in Section VI.

Case IV. Figs. 9, 10, Plate II.—This cord was removed by the writer in a case with symptoms of peripheral neuritis at St. Catharine's Hospital, July, 1886, and nothing can be said about the technique of removal except that the instruments were dull and clumsy. The cord was not examined microscopically until some four years afterward, when the contortions were discovered in the review of the laboratory collection.

The distortions in this case are of a slight degree, and are present in the upper dorsal region. In the section corresponding to Fig. 10 the two anterior horns are fused together in one mass, and the gray commissure is very voluminous. The increased amount of gray matter in the commissure appears to have come from some other level rather than from either of the anterior horns. The central canal (*c*) and the columns of Clarke (*x x*), together with the fused anterior horns, have been thrust too far outward toward the anterior surface of the cord. The middle part of the posterior horn on the right side is thinned down to a mere strand and almost separated from the anterior horn, an appearance which seems to have its explanation in the fact that the right anterior horn in its forward displacement has been pulled away from the posterior horn, and the normally thinnest part of the latter has yielded.

A narrow strand of extra gray matter is seen in the left side following the inner border of the posterior horn. The central third of the posterior white columns shows crushed and deviated collections of white fibers not indicated in the drawing.

Fig. 9, from a section a little below the preceding one, shows a very slight distortion of the gray matter, consisting simply in a thinning and partial separation of both posterior horns from the anterior horns at their junction, like the condition of the right posterior horn in the preceding section. Such a condition as this in Fig. 10 or Fig. 9 is liable to be produced by pinching a soft cord with the fingers or feeling of it roughly to test its consistence. The anterior horns do not appear to be displaced forward to any extent. This condition of the posterior horns looks as if it might have been accomplished by gentle bilateral pressure on the cord, which squeezed and thinned them. As the gray matter is softer than the white, it would tend to show the effects of pressure first.

The white matter in this section shows little if any signs of bruising or deflection.

It might be remarked incidentally that the writer has once seen the condition shown in Fig. 10, in a cord which showed no signs of bruising in the microscopical examination, although violence could not be positively excluded. The thinning of the posterior horns occurred in the cervical region in this case to about the same extent as in Fig. 11, and the surrounding arrangement and structure of the cord were perfectly normal. There were no bruises elsewhere in the cord in this case.

So I am not prepared to say that a trifling malformation like the thinning of the posterior horns in Fig. 9 may not occur congenitally without the intervention of artificial causes. But the latter should be thought of first in explaining any deformed condition of the cord, whether trifling or extensive.

To return to Case IV. The probable soft condition of the cord in the hot weather when the autopsy was made, and the transportation for some distance of the fresh cord, mixed up together with the other organs in a common receptacle, should be taken into account in explaining the artificial changes in the gray matter.

There were no lesions in Case IV, and absolutely nothing in the symptoms pointing to the described changes.

Case V (Figs. 12, 13, 14, 15, Plates II and III) relates to a girl, sixteen years old, who had ordinary chorea and died of an intercurrent disease. No notes extant of the details of the removal of cord. *The hardened cord showed no external signs of bruising or pressure*, but transsections through a portion of the mid-dorsal region, about one centimetre and a half in length, show malarrangement of the cord substances, resulting from bruising at the autopsy or other manipulation.

The section corresponding to Fig. 12 (the lowermost of the series) is a very good example of how a limited column of deflected or displaced white matter may operate on the gray matter. In this instance the deflected column of white matter deeply indents the left anterior horn at the processus lateralis, and fits into an acute angle between the anterior and posterior horns. A still greater deflection of this white column in the same direction would tend to separate entirely the left anterior horn from its connections with the rest of the gray matter.

Figs. 13, 14, and 15, in their order, are the next upward members of the series. This series is exceedingly instructive in showing plainly what has already been spoken of so often—namely, the occurrence of extra bits of gray matter thrust into the section from other levels. In Fig. 13 there is a deficiency of the gray matter, which makes its appearance in the higher levels at 14 and 15.

In Fig. 13 the middle portion of both posterior horns is gone (compare Fig. 10 and Fig. 11, on the right side), and the force driving the absent gray matter to other places is betrayed by two symmetrical, wavy, horizontal hemispherical areas of crushed white fibers, occupying the place of the missing gray matter.

Fig. 14 shows various bands of deflected white matter, a separation of the posterior horns at their middle from the anterior horns, and a portion of the missing gray matter from section 13 interpolated in the middle of the posterior white column, surrounded by bruised white fibers.

Fig. 15 shows very much the same condition, and another tiny lump of the missing gray matter from section 13 is most curiously surrounded by concentrically arranged deflected nerve fibers of the white matter, and is situated in the midst of the posterior white columns. There were no lesions in this cord.

Case V. Fig. 11, Plate II.—This cord was removed from a female adult case of peripheral neuritis by the writer at Charity Hospital, where the use of the chisel and shears are customary, in April, 1889. No details about the cord removal noted. The cord was not diseased in any way.

Fig. 11, Plate II. The bruise (the only one in the cord) is very limited in extent, and lies in the lower part of the eighth cervical segment. It is very much of the same character as that shown in Fig. 12. The outer margin of the left anterior horn is indented by a deviated or crushed bundle of white fibers not shown in the drawing. In Fig. 12 none of the gray matter has been thrust out of the section; but in Fig. 11 a portion of the horn has apparently been pushed up or down, or both ways, to some other level. Unfortunately, this could not be traced out in other sections, for the rest of the cord in this region has been lost. It will be seen, at any rate, that a group of missing ganglion cells in the left side has apparently gone to some other place.

In addition to these cases, a few instances of artificial malformations due to bruises were found in the cords of animals, in the laboratory collection. These cases are worthy of some note, for two or three cases of bruise artefacts in animals have been described in the literature as congenital malformations of the spinal cord. One of these cases came from a dog dying with rabies. The cord was removed by the writer in 1885, as was supposed, with much care, and without any knowledge of having injured the cord, but a recent examination showed that the cord had nevertheless been slightly bruised—for an inch or so in the upper dorsal region. There was comparatively little deflection of the fibers of the white matter, but in many places the posterior horns were attenuated or misshapen in various ways, and in one or two places were altogether absent on one side or the other, having been squeezed away to other levels. This case should be compared with the case of Schiefferdecker. Many of our sections resemble very closely the supposed congenital malformation in a dog's cord reported by this author (see Section VI). A spinal cord of a sheep showed in the dorsal region a quite similar set of appearances due to bruising or other manipulation.

It is rather a common occurrence to find injuries with the resulting appearances suggesting malformations in the spinal cord of oxen procured at the slaughter-house. The cords are taken out by such crude methods by the workmen that every year, among such cords brought to the laboratory for histological class-work preparation, a certain number show lacerations, splits, and topographical disarrangements of the two cord matters, from bruising. Microscopical examination of the hardened specimens of these cords of oxen in the laboratory collection showed in one or two instances various degrees of deformities from bruising, which need no especial description, but they should be noted because Kronthal (Section VI) instances a case in the literature with a detailed description of a congenital malformation in the spinal cord of an ox which had been severely bruised.

A rabbit's spinal cord affected with acute myelitis, in spite of the writer's precautions in removing it recently, showed under the microscope deformities from bruising. A doubtful case of an alleged malformation in a rabbit's cord is instanced by Turner (Section VI).

One or two other cases were found in the cord collection, but they show nothing beyond what is already seen in the cited cases. None of the cited cases showed any evidences of pathological processes, and there were absolutely no symptoms in any of them indicating the described changes.

The topographical changes are due to autopsy bruises, or other manipulation, which in these cases was done entirely unwittingly by the pathologist, and I think the cases are valuable in connection with the general subject to show what may be done to the cord, now and then, entirely unawares, even by skilled and experienced pathologists in the course of routine autopsy work.

It will be shown farther on that these bruises can almost always be recognized under the microscope, even if we have no data of the autopsy procedures, or gross external indication of bruising or negligent handling.

Section V.

A DESCRIPTION OF THE RESULTS OF EXPERIMENTAL BRUISING OF THE HUMAN SPINAL CORD.

I. Gross appearances of the bruised cords.

II. Microscopical appearances of the same.

III. Artificial duplication of the spinal cord.

IV. The minute structural artefacts due to bruises of the spinal cord.

The purpose of the work described in this section is to show that the results obtained by experimental bruising of the cord differ in no wise, or in degree only, from the cases cited in the preceding chapter, and also, what is still more important, that these results are the counterparts of the changes described in published cases as congenital defects or heterotopia, in the succeeding section.

During the past two years, as the opportunity of procuring normal human cords at autopsies was presented, some thirty or more of them were subjected to mechanical forces directed in a great variety of ways, and the resulting changes in the cord studied thoroughly with the microscope.

This experimental work on the cord is divided into two kinds:

In one set of cases the cord was purposely bruised in the process of removal from the body.

In another set of cases the cord was removed in perfect condition, and afterward bruised by mechanical forces in a variety of ways.

The first set of cords were injured by exaggerating all of the procedures in the removal of the cord which are liable to damage it as described in Section III. The chisel and the saw were used carelessly and forcibly. The chisel was purposely driven down on the cord, and endeavors were made to drive some fragments of bone or whole laminæ against the dura by the chisel and the mallet. The bone-cutting shears, and levers to pry apart the bones after incompletely sawing them, were also used in a clumsy or forcible way, designedly bruising the dura mater and cord.

In the second set of cords, some were bruised with the dura mater attached, while others were injured after the dura had been removed. Most of them were damaged while within the dura mater, for the latter contributes materially toward the formation of the more complex artificial malformations.

Some of these cords in this second set of cases were bruised by allowing weights to fall on them from shorter or longer distances. Others were struck with different instruments. Small blocks or strips of wood were placed on some of the cords, and the wood struck or tapped with the hammer. In another cord two pieces of tape about an inch apart were suddenly and simultaneously tied down on the dura, etc. Still other cords were pinched with the thumb and finger with various degrees of force—either in a single place in the cord, or at two not far distant places simultaneously. This pinching of the cord with the fingers gives very interesting results, the extent of which can be controlled in a measure by the operator, so as to produce slight deformities, up to doubling or partial doubling of the cord.

The changes in the cord produced by all of these procedures vary so greatly that no general statements can be made as to the uniformity of the alterations produced by any particular mode of applying the force. Hardly any two contortions of the cord from artificial origin look alike. The same procedure applied to two different cords in exactly the same way will not produce constant results as to the microscopic appearances of the distortions. In some cords the extent of the bruise does not appear commensurate with the amount of force exerted, and in other examples the reverse of this appears.

Doubling of the cord is not easy to produce—at least I have not been able as yet to make very perfect duplication of the cord in these experimental bruises, except in two or three cases. The shapes which the cord-substances are liable to assume from the bruising are quite Protean, and there is nothing very definite or constant in the relations of the complex topographical deviations of the cord-matter to the method of bruising. It is even almost impossible, save in one or two forms of bruises, to reproduce any given result.

The presence of the dura mater and the suddenness of the blow may be commented on briefly in the production of these artefacts. It is the presence and position of the dura mater which is largely conducive to the formation of some of the bruises at the autopsy. Were it not for the dura mater, many of the blows from the sharper cutting instruments would simply cut or lacerate the cord without bruising it. But the dura acts as a cushion and distributes the force of the blow so as to disseminate the cord-substances to inappropriate places. If a cord is laid out on the table, and struck suddenly with the chisel, as at the autopsy, with and without the intervention of the dura, the results vary as described. In the first instance the tendency is to bruise the cord without cutting it, while in the latter instance the cord is liable to be incised or cut in two —without much bruising.

After removal from the body, the cord, of course, slips around in the dura, when struck, to a greater extent than in the body, where both are attached and tense. So the cord on the table may slip away from a tap on the dura mater which it would not escape *in situ* in the dead subject.

If the blow be very sudden, the tendency is to scatter the cord substances about more extensively and grotesquely than in slow, deliberate pressures. If the cord be slowly pinched with the thumb and finger, the white and gray matter may be driven above or below, each remaining in its proper place. The cord becomes larger above or below the cincture, the white matter is more voluminous, the fibers run in abnormal directions, and the gray matter tending to remain in its proper position is larger, and pretty uniformly so in all of its different parts. The result produced is a sort of artificial numerical hypertrophy.

But if the same amount of force expended in this slow manual cincture be concentrated in a sudden sharp impact, the result is altogether different; the gray matter and white matters are detached and scattered about in all sorts of directions.

Of course, all these various modifications of the application of the force are in turn modified by the consistence or freshness of the cord, and this produces correspondingly different phases of deformities. Thus, it may be said that a single blow at the autopsy on the dura mater may produce any of the infinite varieties of distortions, from a slight asymmetry up to a condition in which a whole portion of a segment is shifted bodily to another level, giving a doubling of the cord.

I. Description of Gross Appearances of Bruises of the Spinal Cord.

The blow may leave no gross changes. Perhaps the natural elasticity of the cord membranes or the cord tissues may reduce the cord to its normal contour to some extent after the bruise. A bruise without gross traces in the fresh cord will always show with careful microscopical examination, and sometimes to a very considerable extent in the dispersion of the cord substances. In other cases there are the extensive changes shown in Plates IV to VI, which cover a sufficient variety of phases to make the matter clear.

Case I. Fig. 16, Plate IV.—This cord was removed from a horse dying with azotorrhœa—a disease in horses often manifesting symptoms of paraplegia apparently of a toxic nature. The cord was removed by the writer some years ago, prior to commencing these studies. The autopsy was made in hot weather, twenty-four hours after death, and presented so much difficulty in the use of the ordinary instruments that finally an axe was used to complete the cord removal. The lower dorsal and lumbar portions of the vertebral column were chopped out entire, and then split open with the sharp axe.

At one point in the lower dorsal region there was a circumscribed, fusiform swelling of the cord with diminished consistence and a trifle of flattening. Fig. 16 shows this appearance, and I had the plate drawn from the fresh cord for intended publication, under the impression that softened swelling was a focus of acute myelitis, which corresponded well enough with the symptoms, as the horse had more or less complete paraplegia. Not until quite recently was the cord examined microscopically, when it was positively seen that the appearances were due to bruising and that there were no lesions in the cord.

The cord must have been bruised by a slanting blow of the axe in splitting open the vertebral column. While the gross external changes are considerable in this case, the topographical alterations of the gray and white matters are only of a very moderate degree. This is a very striking exception to the rule—which is, that such striking gross changes as are present in this case correspond to extensive topographical deformities in the sections. The only displacements of the cord substances, however, in this case are limited to slight dislocations and disfigurations of the posterior horns. The customary deflections of the white fibers are quite limited and in many sections entirely absent.

The most interesting feature of the case is the presence of rather large, ragged-walled cavities of fairly considerable vertical extent in the posterior white columns. In one region the cavity takes up nearly the whole of the posterior columns. These cavities are part and parcel of the effects of the bruise, but to an observer forgetful of the effects of bruising they might suggest the lesions of syringomyelia, or appear like preformed cavities. These cavities had no lining membrane, and scattered about diffusely in their ragged, lacerated walls were some extravasations of red blood-cells, also of artificial mechanical origin. The cases of Köppen—discussed more fully in Section VI—should be referred to in connection with these artificial cavities. Köppen instances two cases of what he terms "formations of cavities in the spinal cord of acute origin." While not venturing to question too positively the preformed nature of the cavities in the author's cases, the writer would suggest the perfectly possible origin of cavities, together with the extravasations of blood in their walls, as due to bruise artefacts.

To return to our own case, the cavities seem to have been produced by mere lacerations or a rending apart of the white matter by the force of the blow. If not produced in this way, they may have been caused by the transportation to other levels of crushed masses or detritus of white matter which have left a cavity behind (see Fig. 24). The borders of the cavity consist of perfectly normal white matter and are remarkable in showing no mechanical dispersion of the white fibers so characteristic of bruising.

Such cavities occur not infrequently in bruised cords, but rarely take such a deceptive nearly circular or oval form and position in the center of the cord as in the present case, but most frequently assume the shape of purely mechanical splits or clefts. These artificial cavities in the white matter have some resemblance to the "porous condition of the gray matter" already described, but they appear to be produced in a slightly different manner.

Figs. 17 and 18 (Case II, Plate V) are taken from two different places in the dorsal region of the same cord. Both of the bruises were produced by sudden compression with the thumb and finger, with the intention of reproducing the artificial doubling of the cord in the two published cases of Seguin and Fürstner and Zacher (see Section VI).

In Fig. 17 there are two bruises—an upper and a lower one. In the lower one a portion of the cord, principally white matter, has broken through and has been squeezed out of the pia matral covering of the cord. The red streak in the extruded mass, supposed in the fresh condition to be gray matter, was found in subsequent microscopical examination to be a distorted blood-vessel surrounded by some artificial hæmorrhages. The second upper bruise is indicated by a circumscribed globular lumpy swelling out of the cord contours. The extruded mass below was soft and pasty in the fresh condition, like the condition of the white matter in a softened normal cord in late autopsies in warm weather. The remarkable feature of these two bruises is that the cord does not show the usual girdles of deficiency to compensate for the increased volume of the cord at the bruised regions as distinctly as usual. As a rule, where the cord is struck there is a dent or cincture, and a swollen lump of the dispersed cord-matters is found above or below. But the correspondence of volumetric relations in the bruises does not appear at all as frequently as would be expected. Very often the cord may show the lump-like appearance as in the upper bruise of Fig. 17, and yet above and below the lump the cord may seem very nearly normal in its volume. The sense of touch, however, will sometimes give a better appreciation of the deficiency above or below the lump in the cord than the eye.

In the portion of the cord represented by Fig. 18 the pressure by the thumb and finger was applied simultaneously on either side of a given point; the pressure in this instance was rather more deliberate and gentle than in the portion shown by Fig. 17. The extruded mass here lies on the anterior surface of the cord, and consists exclusively of white matter; there is also a slight fusiform swelling of the cord at this point, while above and below, the cord is slightly smaller than elsewhere in the same region. (It was impossible for the artist to show this diminution of the cord volume well above and below the swelling in the position the cord was placed. To show this, another picture of the lateral face of the cord would have been requisite. The pinching was applied to the cord bilaterally). The plate shows well enough what has happened from the pinching to dispense with further detail. Sections from both of these cords will be described in connection with the microscopical appearances of the experimental bruises. Fig. 62, Plate XV, is from a section through the extruded mass in Fig. 17, and Fig. 63, same plate, corresponds to Fig. 18.

Case III. Figs. 19 to 20, Plate VI.—The bruise in this case was effected in the purposely careless removal of a firm cord in cold weather, from an ordinary case of phthisis, at Charity Hospital. The chisel and the shears were used freely. The chisel had shoulders to arrest its entrance into the spinal canal, but it was driven down through the lumbar laminæ with a sharp mallet-blow, with the result of impacting a broad splinter of bone into the vertebral canal. To get rid of this, the bone-cutting shears (a particularly powerful and awkward pair) were used. Between the action of both instruments, although the dura mater showed no indications of it, the cord was damaged as depicted in Fig. 20, which shows a depression in the cord, and corresponding to it an extrusion of cord substances from the depressed place. The bruised place was a trifle above the commencement of the cauda equina. A doubling of the cord was sought in this experiment.

The cord in Case IV was taken at the same hospital, in a similar manner, to reproduce doubling of the cord. The chisel alone was used, and the laminæ in places, without being sawed, were severely hammered with the chisel and heavy mallet with the result shown in Fig. 19. The plate tells its own story well enough without further explanation. The remarkable thing about the cord is the extrusion of the cord matters clear through the dura mater in the upper bruise. This was probably furthered by the tension and attachments of the cord and membranes while in the vertebral canal. The bruises in this cord are confined to the dorsal region. In this instance a remarkably perfect duplication of the cord was produced. One portion of the cord was telescoped down sidewise over another portion, and the result is shown in Figs. 64 and 65, Plate XV, drawn from sections through the cord and the extruded portion alongside of it.

These last cases are examples of extraordinarily severe bruises. The lesser contusions show a mere diffuse irregularity in the exterior contour of the cord. Or there may be a single very circumscribed dent or dimple in the surface, or a minute prominence or pimple-like projection. Still, other cords show little mounds and depressions on the surface, multiple or aggregated in their distribution. Sometimes there are minute multiple extrusions of the cord substances on the surface of the cord (see Fig. 23, Plate VII), some of them fused together in larger or smaller masses.

The consistence of the cord is diminished at the seat of the bruise corresponding to the severity of the blow. If the bruise is severe and the superficial covering of the cord is not ruptured, the cord feels soft and pulp-like within the wrinkled or partly collapsed membranes. If a portion of the cord bursts through the membranes in the bruising, it is liable to be soft and pasty and yellowish-white in color. Sometimes the extruded masses show larger and smaller artificial hæmorrhages in their substance (Fig. 18). If a portion of the cord is dislodged to some other level, and yet does not burst through the membranes as in Fig. 18, *a*, it produces a larger or smaller lump which bulges out the contour of the cord. In such places (Fig. 18) the consistence of the cord is increased, and the superficial neurogliar coat is tense and hard. A normal cord which has been bruised extensively feels somewhat like a cord which has been softened by acute myelitis.

In the hardened cord these bruises also show very well, and their external topography can be more conveniently studied. The slightest extrusion of cord substances on the surface should lead to the suspicion of a contusion.

While hardening in Müller's fluid, the deflected bands of white matter in bruised cords assume the color of the gray matter. They appear as little gray spots or diffuse areas scattered about over the surface of the transverse section, and this occurrence, often coupled with dispersed fragments of gray matter, gives a spotted appearance to the cut surfaces of the cord while in Müller's fluid or in the subsequent alcohol immersion. These strikingly distinct circumscribed or diffuse spots often look so much like lesions that the observer, in reconnoitering the specimen by transverse incisions during the hardening stages, is liable to consider them foci of softening or disseminated myelitis.

In Plate VII the drawings were made from the hardened specimens, and show some additional points about the macroscopical appearances of bruises of the spinal cord.

Fig. 21 was drawn in 1885 from a specimen removed at Bellevue Hospital, from a case with symptoms of peripheral neuritis. The writer was completely misled by the gross appearances, being then ignorant of the numerous artefacts caused by accidental autopsy bruises of the spinal cord. The lesions of this disease were less well understood at that time, and in searching for changes in the spinal cord the appearances at *a* (Fig. 21) were described in detail in the notes of the macroscopical features as a tumor or solitary tubercle involving the third lumbar segment, which was supposed to agree with the symptoms. The little lump-like protuberance was really caused by bruising the cord; a portion of the white matter was thrust out of the cord, and this distended and pouched out the superficial neurogliar coat so as to resemble a small neoplasm. An exceptional feature about the case is that there was no deformity of the gray matter anywhere in the cord, or even much disturbance of the white matter, excepting the portion thrust out into the protuberance. Generally the force of a bruise sufficient to extrude the marginal white matter in this way also distorts the gray horns considerably. Such a limited circumscribed effect of a bruise as in this case is very uncommon.

Fig. 22 is another instance in which the results of a bruise simulate the appearances of a tumor of the cord quite closely. The cord was bruised experimentally, and a considerable portion of the cord substances have been thrust out through the lateral surface of the cord. The lower sectional surface of the drawing shows a deficiency in volume corresponding to the extruded portion. The cord was bruised with the intention of producing a duplication of the organ, which was but partially successful, as shown in Fig. 66, Plate XV, drawn from a section of the specimen.

The cord in Fig. 23 has been very severely bruised, partly in the autopsy procedures and partly by manipulation after its removal. In two places the cord is quite thoroughly flattened and has had its substances pushed both upward and downward, and forms two corresponding swollen regions. *a* represents the upper dorsal and *b* the lower cervical region. The specimen shows especially well how larger and smaller portions of the cord substances (principally white matter) have burst through the external coverings of the cord, and appear as multiple wart-like excrescences. Duplication of the cord was produced in both of the swollen regions. See Figs. 67 to 69, Plate XV, from the upper swollen region, and Figs. 70 to 75 from the lower swelling.

Fig. 24 is exceedingly interesting. This drawing gives a good idea of the actual movement of a deflected column of the two cord substances (principally white matter) from one level to another, and how the presence of the transported column in the new level distorts the topography of the cord. In this instance the deflected column splits open the left anterior and posterior horn, and fits into the cavity as a plug. The left-hand segment of the cord was struck with the ulnar side of the hand while lying on the table. The cord was hardened without incisions for some weeks in Müller's fluid, and while yet pliable was patiently dissected and opened like a hinge, so that the plug of dispersed white matter was exposed and pulled out of the split in the gray matter. This drawing, then, shows one of the ways in which deceptive cavities may occur in bruised cords. If in handling the cord after the bruise such a plug should be moved back again whence it came, or should shrink a little, a cavity would appear in the sections. The cavities in the horse's cord in Fig. 16, Plate IV, may have been formed in some such way as this. The sections from this specimen show nothing of especial interest and they have not been pictured. If the plug had been left in place, sections from the right-hand segment of the cord would look quite similar to Fig. 1, Plate I.

Taken all together, these gross appearances are most characteristic. There is no other condition of the cord which looks like them, and it is difficult to understand how they should have been mistaken for congenital deformities or heterotopia. It must be that some of the published cases of bruises mistaken for congenital malformations have been described from microscopic appearances by observers who did not have the opportunity of seeing the fresh gross appearances at the autopsy. *It may be repeated that very often quite extensive artificial displacements of the cord substances never show at the autopsy at all, or alter the external gross appearances of the hardened cord.*

II. Microscopical Appearances in Experimental Bruising of the Cord.

The microscopical appearances of the sections from these experimental bruises vary so greatly and are so difficult to convey an intelligent idea of by mere description, that it has been thought best to replace the text of this section largely by drawings. The intention is to show counterparts of the microscopical characters described in the published cases, and to show a sufficient number of various phases of the results of bruising to convince the reader that the cases in the preceding as well as the published cases in the succeeding chapter are simply artefacts of the spinal cord.

Case I. Figs. 25–30, Plate VIII.—These sections were taken from a fairly firm, carefully removed normal cord upon which a flat twenty-gramme weight was allowed to fall from a distance of twelve to eighteen inches, with the result shown in the figures. The cord was protected by the dura and laid out on a table. The weight fell on the cervical enlargement.

In Fig. 25, the lowermost of the series, the right anterior horn is absent, while the left anterior horn is deeply indented. The absent right anterior horn begins to make its appearance in the higher levels in Figs. 29 and 30. Some deflected white matter has been thrust outside of the periphery in Fig. 25. Another feature in this section is the deflection of the white fibers by the connective-tissue strands of the cord. In the right lateral column several bands of fibers pursue contrary and devious directions, caused by deflections, according to the directions and course or strength of the connective-tissue sæpta.

Figs. 26 and 27 show very much the same conditions as in Fig. 25. The left anterior horn is deeply indented and the right anterior horns become more voluminous and are very much disfigured. In Fig. 26 radiating, brush-like deflected white fibers pass out toward the periphery from the anterior horns. In Fig. 27 the areas of mechanically dispersed fibers of the white matter are indicated by the dotted lines. In Fig. 28 the right anterior horn becomes considerably larger and sends off a spur-like process into the lateral column.

In Fig. 29 the most striking feature is a dislocated or extra fragment of gray matter on the right side which has been thrust up from the lower levels. Fig. 30 shows this extra fragment of gray matter with its ganglion cells, fused with the right anterior horn, which is indented by a deflected band of fibers in the white matter.

In all of these sections the artificial changes in the white matter merit attention, particularly the changes in the directions of the dispersed nerve fibers relative to the posterior sæptum and the two connective-tissue strands and vessels bounding the column of Goll. Fig. 25 corresponds to the first dorsal segment and Fig. 30 to the upper surface of the eighth cervical segment.

In Fig. 31 the indentation of the right anterior horn is still more pronounced and causes a singular spur-like projection of gray matter with ganglion cells, from the middle of the posterior horn. This figure again shows exceedingly good examples in the posterior columns of how, when the white fibers are driven against the stronger connective-tissue sæpta, they are deflected in various ways.

Just behind the spur-like projection in Fig. 31 at *a* will be noticed a mass of deflected white fibers different in appearance from the other deviated fibers, which pass about in wavy parallel lines for the most part parallel to the plane of the section. The mass alluded to is different, in the fact that the fibers are crushed together and disintegrated and give the appearance of an amorphous or coarsely granular mass. A similar group is seen at *b*. This behavior of the fibers, when crushed together instead of being simply deflected while retaining their structure, will be frequently seen in the drawings from the other sections. These crushed bundles of fibers are less frequently observed than the other variety of deflected fibers.

Case II. Figs. 32, 33, Plate IX.—The cord in this case was struck in the upper lumbar region with the ulnar side of the hand while lying on the table stripped of its dura mater.

Fig. 32 shows an absence of nearly the whole gray matter on the left side, while, what is very remarkable, the right anterior and posterior horns are perfect. Fig. 33 shows a similar condition. The missing gray matter was not traced to its misplaced destination in this case.

The appearance of the left segment of gray matter in Fig. 33 is remarkable. The shrinkage of the gray matter from the pressure of the blow is so uniform in all directions that an atrophic condition would be suggested were the observer not cognizant of the manifold topographical artefacts of bruises of the cord. The condition of the shrunken gray segment here looks a little like the condition found in the adult cord after intra-uterine amputations, or the apparent hemiatrophy suggests the condition in an adult after poliomyelitis anterior. In looking at Fig. 32 we can readily understand how the whole segment of the gray matter on one side might be transported to another level, and result in the presence of three segments of gray matter. Just such a condition as this misleads writers to describe the appearances as a congenital partial duplication of the cord. Both of the sections correspond to the second lumbar segment.

Case III. Fig. 34, Plate IX.—A hard normal cord was tapped by the autopsy chisel, while lying stripped of its dura on the table, in the mid-dorsal region. A narrow band of deflected white fibers have cut off the tip of the left anterior horn and a very near approach to the same thing is apparent in the right anterior horn.

Case IV. Fig. 35.—Cord treated similarly as in Case III. In this contusion may be remarked the lengthening out of the right anterior horn, the flowing out of the deflected white fibers beyond the periphery of the cord, and a small dislocated portion of an anterior horn from some other level.

Case V. Fig. 36.—Manual torsion applied to the naked cord. This shows the result plainly enough to omit description.

Case VI. Figs. 37 to 39, Plate X.—A fairly firm normal cord was gently pinched with thumb and finger in the mid-dorsal region. Figs. 37 to 39 constitute a series through this contusion. In Fig. 37 the commissure and anterior horns are absent and there is much diffusion of the white fibers in a horizontal direction. In Fig. 39 the deficiency in Fig. 35 appears as extra gray matter, causing the appearance of a third anterior horn springing from the gray commissure between the other two horns rightfully belonging in the section. Fig. 39 shows very well on the left side the production of the minute multiple excrescences of white matter on the surface of the cord referred to in the description of the gross appearances of the experimental bruises.

CASE VI. Figs. 40, 41, Plate XI.—The cord protected by the dura was intentionally damaged with the saw in its removal. In Fig. 40 a spur-like projection of the left anterior horn has been produced by a shallow depression in the gray matter. In front of the left horn are two isolated bits of gray matter containing ganglion cells lying surrounded by deflected tracts of white matter which are indicated by the dotted areas. In the column of Goll, corresponding to the position of the sciatic field, is a very compact mass of crushed fibers which simulates the appearance of a sclerotic patch with carmine staining. The simulation of a sclerotic patch is quite deceptive, and these crushed areas of white columns have probably been described as sclerotic or other diseased patches.

In Fig. 41 the projecting spur is broken up into three small bits of gray matter, and this figure also shows how the spur was formed at the expense of the gray matter of the left anterior horn. This figure also shows an oval patch of wavy white fibers grouped on either side of the posterior sæptum, and this would not simulate sclerosis, as in the other section, as the outlines and course of the fibers are distinct. Attention may be called to the singular circumscribed deflection of white fibers on either side of one of the smaller stiff connective-tissue sæpta in the left lateral column near the middle of the elongated posterior horn.

CASE VII. Fig. 42.—This section was also taken from a cord experimentally bruised in its removal by the osteotome at Roosevelt Hospital, and needs no special description. It is simply another of the many attitudes which the cord substances may assume when bruised mechanically. In the left lateral column two sets of deviated white fibers are most curiously parted on either side of a short connective-tissue sæptum, like the hairs of the head.

I am unable to determine at present just how this singular disposition of the deflected white fibers about the connective-tissue sæpta and blood-vessels is to be accounted for. In some places it looks as if the oscillation of the sæpta themselves, from the shock of the blow, had deflected the white matter, yet in other places the appearances are such as to indicate that the white column had been moved first and had then run up against some sæptum in its path with an ensuing change in the direction of the deviated column. Probably both of these agencies work hand in hand in many instances. At any rate, the presence and arrangement of the sæpta and blood-vessels in the white matter play a very important part, and account for some of the bizarre forms in the arrangement and distribution of the deviated white fasciculi.

Quite frequently the displaced white fasciculus is moved forcibly enough to break through the coats of strongest sæpta of the cord, such as the sæptum posterius (see Figs. 43 to 47).

CASE VIII. Fig. 43.—This cord was bruised by cinctures, effected by tying suddenly broad pieces of tape around the dura, and Figs. 40 to 42 constitute a series showing the changes a slight distance above one of the moderately severe cinctures in the mid-dorsal region. This is one of the most frequent alterations which ensues from bruises of all kinds—viz., an eruption of white matter in the middle of the cord, bursting through the gray commissure and thrusting asunder the two anterior horns. One or another modification of this result happens very often indeed.

Fig. 43 depicts the slighter grade of intensity of this process of median rupture. A slender band of white fibers, appearing from some other near level, has traversed the posterior sæptum, and tends to cut the right anterior horn in two.

Fig. 44 shows a similar result, except that the deflected white fasciculus has passed in another direction, has burst through the gray commissure, which in Fig. 45 is partially disrupted by a continuance of the same process. The rupture of the centrally situated white matter has also thrust the two anterior horns apart to a considerable extent in this section.

In both of these sections (Figs. 43, 44) the column of diverted fibers of the white matter is quite limited, and there is a correspondingly small degree of deformity in the gray segments. If the reader will review the preceding sections he will observe that the greater the amount of dispersion of the white fibers, the greater is the deformity of the gray matter. Thus, as a general rule, excessive deformities of the gray matter go hand in hand with extensive deflections of the white matter.

CASE IX. Figs. 46, 47, Plate XII.—Figs. 46 and 47 belong together and are taken from serial sections of a cord intentionally wounded at the autopsy. In Fig. 46 the left gray segment is separated from its fellow and curved out laterally toward the periphery of the section. Two fragments of extra gray matter are seen in the region between the two separated gray segments, and are surrounded by a mass of deflected white fibers which are cut obliquely. The source of the extra bits of gray matter can be seen in Fig. 47, where there is a corresponding deficiency of gray matter on the left side.

Fig. 48 needs no special description, for it is isolated from its fellow-sections, which show the destination of the dislocated anterior horn on the right side. The wavy lines clustered about the region of the dislocated horn show a very faithful image of just how these horizontally deflected nerve fibers of the white matter look in the section.

Figs. 49 to 51 correspond to a series of sections from a cord purposely bruised in its removal. The reader should mentally reverse Fig. 49 from right to left so that it will correspond properly with Figs. 50 and 51. One of the anterior horns in Fig. 49 has been nipped off at its junction with the gray commissure by a hemispherical mass of deflected white fibers passing horizontally in the section. The absent horn appears again as two fragments in Fig. 50, which are united in one mass in Fig. 51. The artificial changes in the white matter in all three sections are very typical.

All of the sections in Plates XI and XII are from the dorsal region except Figs. 40 and 41, which are from the eighth cervical segment.

It may be remarked here that the aberrant cord substances, particularly the gray matter, which can be traced more readily than the white, are sometimes dispersed to considerable distances in the cord. Roughly speaking, the aberrant or dislocated gray fragments may be caused to travel a distance in the cord from one, two or three millimetres to a good portion of a centimetre. No notes, however, have been made of accurate measurements in reference to this matter.

Figs. 52 to 55, Plate XIII.—These drawings are made from sections selected at random from a number of artificially bruised cords about which there is nothing especially noteworthy in details of the method of bruising, except in the sections corresponding to Figs. 54 and 55.

The two cords from which these sections were taken were prepared by placing portions of the posterior archway of the vertebral column on the cord lying on the table within the dura, and manipulating the bones with the chisel and hammer.

Fig. 52 shows no especially new features about the gray matter except in the dislocation of the right anterior horn, but the condition of the white matter in the anterior portion of the section deserves inspection, for it shows how the mechanically dispersed nerve fibers appear when passing through the section obliquely instead of horizontally, as is usually the case. Here the dispersed nerve fibers are in the act of bending over to seek some new level in the cord.

What has happened in Fig. 53 is shown plainly enough in the drawing to omit further description. The changes in the white matter in the center of the cord are not represented.

Fig. 54 is instructive in demonstrating how nearly all of the gray matter may be driven away from a given level. In extensive bruises, where a portion of a whole segment is shifted within or partly within the cord coverings to another level producing doubling of the cord, the deficient portion may be so deprived of the cord substances as to present hardly anything but the collapsed cord membranes in section. Such a complete expulsion of the gray matter to another region as shown here is liable to produce more or less complete duplication of the cord in the new levels, and Fig. 54 is the sort of picture we often see above or below artificial duplications of the cord.

The striking feature in Fig. 55 is the very extensive diffusion of the artefacts in the white matter; there are no normally situated white fibers in the whole section; the entire territory of the white matter is occupied by deflected fibers, and even the connective-tissue sæpta are broken and distorted. Fig. 56 will be described among the artificial duplications of the cord in the succeeding pages.

III. Artificial Duplication of the Spinal Cord.

After having described the simpler forms of bruises of the cord, which constitute the majority of the cases published as heterotopia of congenital origin, it remains for us to study the more complex results of bruises producing artificial doubling of the cord, for these have also been described in a few instances in the literature (Fürstner and Zacher, Kronthal, Feist) as congenital malformations.

Injuries to the cord at the autopsy seldom result in duplication of the organ. The direct or indirect blows from the instruments almost always produce the minor forms of deformities; if the blows be very violent, the cord is lacerated or mutilated, but not often doubled. In fact, any perfect degree of duplication is very difficult to produce by any sort of experimental means. Yet, occasionally in removing the cord the operator may strike the organ in such a way as to cause doubling over a limited region without apparently having in mind the least possibility of the entirely artificial production of such a result.

There is not any very distinct line of demarkation in these bruises of the cord between the lesser topographical alterations and complete duplication of the organ. They merge into each other. The several complicating factors incident to bruising of the cord at the autopsy—such as the several degrees of the force of the blow, its direction, the driving down of larger and smaller fragments of bone on the cord, the consistence of the cord itself, etc.—are so variable that, when artificial doubling of the cord is effected, the topographical artefacts in the sections are not at all constant. The changes are just as irregular as in the lesser grades of bruise already studied.

Thus there are several degrees of doubling of the cord due to bruises; the operation of the variable factors incident to bruising may result in dislodging only a small or incomplete portion of the cord from one place, and, fusing this dislodged portion with the periphery of the cord at another level, may produce only a partial doubling. On the other hand, the bruise may shift a complete segment and telescope it within or over the periphery of the cord, above or below, and produce quite a perfect duplication of the organ. Between these two forms of duplications—the incomplete and the more perfect forms—there are all sorts of intermediate gradations.

The different writers meeting with these intermediate forms of doubling, and mistaking them for congenital malformations, describe them as "rudimentary cords" (persisting and remaining fused to the primary cord), or "partial or incomplete duplications of the cord of embryonal origin."

The reason that perfect duplication of the cord from bruising—that is, more or less perfectly formed cords lying side by side or fused together within the periphery of the cord—is so difficult to produce by experiments or accidentally in routine autopsy work, is because the shifted segment of the cord becomes so badly disfigured or mutilated in its dislodgment and transit from one level to another. The cases of Fürstner and Zacher and Seguin (see Section VI) are remarkably perfect results in duplication from autopsy manipulation. The incomplete forms of duplication, however, are produced not infrequently at autopsies, and are very readily produced experimentally.

The gross appearances of these cord duplications tend to resemble the features shown in Plates V and VI. Sections from the cord in Fig. 19 showed a very perfect form of duplication. Sections of the other cords in these plates do not show complete duplications, but merely extrusions of the white matter. The cord is always more voluminous at the seat of the duplication, and above or below will be found a deficient, collapsed, or flattened region, corresponding to the transported segment. Generally in these duplications the dislodged segment bursts through the neurogliar sheath of the cord and is pushed up or down over the surface of the organ, while still attached to the original site by a broad or slender pedicle (Plates V and VI). More rarely a segment of the cord may be telescoped over another, without rupturing to any great extent through the outside covering of the organ (Plate VII, Fig. 23). Duplications of this kind are nearly always very circumscribed. They seldom occupy more than one half to one centimetre in vertical extent, and often but a few sections can be cut through them.

A duplication of the cord may be produced by a single blow over a limited region; but the most successful way of producing duplications is to bruise or compress the cord in two places either side of a given point. In such an instance the doubled region has a fusiform shape, with blunt, conical, or flattened ends (see Fig. 23). Very likely some of the artificial duplications recorded in the literature were produced by striking the cord in two different not far distant places.

The following plates show the best results of duplications in very many cords experimented with. While we have not been able to exactly reproduce the appearances of the sections in the cases of Fürstner and Zacher, Seguin, and Feist—for it is excessively difficult to reproduce the given appearances of any bruise, or even to get the same result from like bruises of two different cords—yet these experimental results approximate the features of these cases comprehensively enough to demonstrate that these "rudimentary cords" and "partial" or "complete duplications of the cord," described in the literature as malformations, are nothing but bruises.

Fig. 56, Plate XIII. This cord was pinched with the fingers, either side of a given point. Before pinching the cord a little slit was made in the superficial neurogliar covering, on the postero-lateral surface, to let the dislodged cord matters escape.

The section (from the first or second sacral segments) shows a failure in duplicating the cord rather than a good result. Quite a large volume of nerve fibers have been squeezed up from below and run out horizontally from the posterior column beyond the periphery of the section. The gray matter in the extruded portion is almost entirely composed of the gelatinous substance of Rolando, which, near the periphery of the cord, is split up into anastomosing trabeculæ by deflected columns of white matter.

Figs. 57 to 61, Plate XIV, constitute a series through a bruise of the cord which produced more or less complete duplication. The cord—one of rather diminished consistence; autopsy forty-eight hours after death, in warm weather—was injured by driving down fragments of bone on it while it lay in the vertebral canal, within the unopened dura, after the posterior vertebral archway had been removed.

Fig. 57. In this drawing there are four anterior horns. There is a complete section of the cord, and fused on its anterior surface is a portion of the cord from some other level, which contains two anterior horns. In the complete section the anterior horns are curiously lengthened and curved, and are surrounded by dislodged fibers of the white matter. The piece of gray matter indicated by *y* is difficult to identify. It looks like a part of a posterior horn.

What has happened here is, that a portion of the cord from one level has been forced down along the anterior surface of the cord to another level, where there has been a partial fusion of the two portions. The places marked *x x x* show some of the minute structural artefacts of the white sometimes produced by bruising. In these areas the fibers have not been thrust out of their course; they are still in their proper position, but have been squeezed together and have been changed structurally, so that with the low power, and in their behavior with carmine, they resemble areas of sclerosis or secondary degeneration.

Fig. 58, the next of the series, shows a still greater extent of the dislodged segment, and how it has been telescoped into the anterior fissure, spreading apart the lips of the fissure, and the anterior horns at another level in the cord. The dislodged portion has an anterior fissure as well as a set of anterior horns, with a dislocated commissure. The posterior horns belonging to the extra-anterior horns seem to have been left behind at their proper level. At *x* is shown again one of the minute structural artefacts in the gray matter from bruising—viz., a rarefaction or mechanical disintegration of the gray matter, so that a porous condition results, which stains faintly.

Fig. 59. This section shows only a slightly different condition from the preceding one. The dislodged segment is still impacted in the anterior fissure, and the two extra-anterior horns are fused together in a U-shaped mass. Both arms, *a c*, as well as their junction, *b*, contain scattered ganglion cells. At *d d* are some deflected bundles of nerve fibers which are rather unusual, in the fact that, although grouped together, they are isolated, and occur in such small, closely approximated bundles. The majority of these bundles (*d d*) run obliquely through the section; *f f f* indicates some masses of white fibers which are not altered topographically, but structurally, as described in Fig. 51, *x x x*. A porous or rarefied condition of the gray matter, almost amounting to an actual cavity, is seen at *e*.

Fig. 60 shows, with a slight modification, the same appearances as in Fig. 59. The new feature in this drawing is the extra portion of gray matter united to the tip of the left anterior horn in the complete section. This seems to be a third extrinsic anterior horn, and not a lengthened-out portion of the horn properly belonging in the section. So at this level of the bruise there are portions of five anterior horns. In the right-hand arm of the U-shaped portion of gray matter in the dislodged segment will be noticed a feature which sometimes occurs in a bruise—viz., that the filamentous processes radiating out from a displaced horn become rubbed off or partially disappear in the transit to new levels. In this way a dislocated horn sometimes has a smooth appearance as to its bounding surfaces. As in the previous sections, the dislodged segment is crowded into the anterior fissure of the complete section, but is quite intimately fused with the rest of the cord at the new level.

Fig. 61, the final member of the series, shows the fusion of the U-shaped mass with the gray matter at the level of the cord, where the mass has been telescoped. The four anterior horns have been joined together, two by two, at *a* and *b*, which gives the section a most curious configuration. At *a* are some horizontally deflected nerve fibers of the white matter which give the deceptive appearance of commissural fibers passing between the two fused anterior horns (compare with Kronthal's alleged case of malformation of spinal cord of an ox in Section VI). Some bundles of white matter which have been thrust up through the gray matter are shown at *d*. This mechanical intrusion of columns of white matter into the gray matter occurs quite frequently in bruises, but the writers on heterotopia misunderstand them, and call them "anomalous bundles," supposed to be misplaced congenitally (see Feist's first case, Section VI); *e* denotes a rarefied place in the gray matter, and *f f f* have the same significance as in Fig. 59, and as *x x x* in Fig. 57.

Fig. 62, Plate XV, is from a section through the lump of extruded cord substances shown in Fig. 17. The bruise has not doubled the cord, as was intended; the portion dislodged by the bruise consists almost entirely of white matter. The two indentations on the right-hand part of the section containing cross-sections of the nerve roots indicate the boundary line between the extruded portion and the cord itself. The deflected nerve fibers in the left posterior column describe a U-shaped arc, and at *x* and *y* these fibers turn vertically out of the section after pursuing a horizontal course across the posterior column. The right posterior column is occupied by obliquely diverted fibers (see V); *z* shows again the effects of connective-tissue sæpta in modifying the course of the deflected fibers.

A very important thing in this section is the occurrence of minute multiple hæmorrhages induced mechanically by the bruise. The force of a bruise is sufficient sometimes to burst the walls of the smaller blood-vessels and disseminate their contents about into the cord substances, sometimes in the white matter, but generally most extensively in the gray matter. The drawing shows but a few of the larger artificial hæmorrhages; they are indicated by the deep-black spots in the right interior horn (compare with the hæmorrhages described by Buchholz in his first case in Section VI). At *w* are indicated a group of fibers in the white matter which are not dispersed or altered topographically, but are changed in their minute structural details so that they stain in a slightly different way from the surrounding fibers.

Fig. 63 is from a section through the bruised part of the cord shown in Fig. 19, Plate V, and needs no detailed explanation other than that it is a very faithful representation of how these horizontally displaced nerve fibers of the white matter appear in a section.

Fig. 66, corresponding to the second lumbar segment, is from the cord shown in Fig. 22, Plate VII. The extruded portion consists of both gray and white matter, and is connected to the cord by a slender pedicle, through which dispersed white fibers have flowed out into the lateral mass. Sections from bruises, resembling this drawing, have been pictured as showing a "rudimentary cord" attached to the primary cord (see plates of Kronthal's first case).

Figs. 64 and 65. These drawings show a very perfect form of duplication of the cord. The sections were taken through the extruded portion of the cord in Fig. 19. The drawings show two portions of the upper dorsal cord lying side by side. In Fig. 64 the dislodged portion is unattached to the cord save by a few shreds of pia mater, while in Fig. 65 a narrow pedicle attaches the misplaced segment to the cord itself. The whole area of the white matter is occupied by deflected fibers running in various directions, but they are not shown in the drawings.

This is the most perfect duplication of the cord which we have yet succeeded in producing, and it is important to note that the sections, although from another region in the cord, are fully as perfect as in the case of Fürstner and Zacher (see plate in Section VI), which is recorded as a case of congenital malformation. Very rarely is the contour of the gray matter in an artificial duplication of the cord preserved as perfectly as in these sections. (It is highly probable that Fürstner and Zacher have neglected to picture or record completely the deflections of the white matter in the doubled region in their case.)

In Fig. 64 are shown two symmetrical areas of rarefaction of the gray matter which border on the production of cavities.

Figs. 67 to 69 are taken from a set of serial sections through the upper swollen region in Fig. 23, and are good examples of the general features of the ordinary results of duplication of the cord from bruising. If a bruise of the cord does produce a duplication, nine times out of ten the sections have the irregular contours of the gray matter in these figures rather than the more perfect and exceptional results shown in the two preceding figures.

These sections show that two portions of the cord have been telescoped together, so that their anterior surfaces face each other. One of the portions (the upper one in the drawings) corresponds to the first dorsal segment, while the other portion belongs to the lower cervical region.

In Fig. 67 the gray matter in the upper section appears to have the form of two perfect segments of gray substance, but the left-hand segment, although having the shape of an anterior horn, contains no ganglion cells, and is really only a portion of the gray commissure and posterior horn which has been artfully deformed so as to appear like an anterior horn. In Fig. 68 the real companion anterior horn makes its appearance in the upper section, and in Fig. 69 the gray matter, although somewhat deformed, assumes the characteristic topography of the first dorsal segment. It will be seen that while the upper section increases in area the lower cervical section diminishes in extent, so that the two segments have been spliced together as one would slide two wedges together with the apex of each one lying against the base of the other. The artefacts of the white matter are not shown in the drawings.

Figs. 70 to 75. These sections are selected from a series from the lower swollen region in Fig. 23. This series is exceedingly interesting in demonstrating the complex and irregular character of artificial duplications of the cord.

In Fig. 70 a portion of the dorsal cord lies in front of and is partially fused with one of the lower cervical segments. In the dorsal cord the right anterior horn, *a*, has been dislocated from the gray commissure and adjacent gray matter. In Fig. 71 the same dislocated horn, *a*, together with its surrounding white matter, has been thrust out laterally on the left side into a tongue-like projection. The dislocated horn looks as if it were stretched out into a long, slender mass; but this is not the case. The seemingly extended portion of this dorsal is really contributed by the right-hand (in the drawing) cervical horn, which is almost connected with the dorsal horn, *a*, by a curved spur-like projection.

In Fig. 72 the source of the increased volume of the dislocated horn, *a*, is easily understood. The substance of the right-hand cervical horn has flowed out into a long, slender mass and joins the dislocated dorsal horn. Fig. 72 is the only one of the series in which the changes in the white matter have been shown. Fig. 73 shows very much the same conditions as in 72, but a new feature in this section is the fragment of gray matter, *b*. Besides sending off laterally and obliquely upward the long, slender column fused with the dislocated dorsal horn, *a*, the right cervical horn also expels a portion of its substance into the dorsal cord designated by *b*. In sections 72 and 71 the connection between the cervical horn and its appertaining fragment, *b*, is lost, and in 72, and especially in 71, the fragment *b* appears to belong in the dorsal cord as a dorsal horn, whereas it really belongs to the cervical gray matter. Thus, by the expulsion of the cervical gray matter, and by their fusion with the gray matter of the dorsal cord in two different places, the topography of the sections becomes very complex.

Fig. 74 should be reversed from right to left. The dislocated dorsal horn is still present at *a*, while the bridge of gray matter connecting it with the cervical horn has disappeared. Most of the ganglion cells of the cervical horn in question are absent. They are to be found in the higher levels in the fragment *b* and in the gray portion fused with the dislocated dorsal horn in Figs. 73, 72, and 71. In Fig. 74 the gray commissure has also united with the adjacent cervical horn.

In Fig. 75, the final member of the series, the appearances are very curious. A dorsal horn and a cervical horn of the same side have disappeared from the section and the remaining dorsal and cervical horn of the opposite side are joined together by a slender band of gray matter. The gray commissures of the two united horns are likewise joined together. The missing dorsal horn corresponds to *a* in the different sections, and the absent cervical horn has been expended in furnishing the fragment *b* and the elongated column fused with *a*.

It must be confessed that the appearances of such a section as 75 are very deceptive, and would be quite inexplicable without a set of serial sections, and would tempt an observer to think of a congenital malformation.*

IV. The Minute Structural Artefacts due to bruising the Cord.

Thus far in these notes only the topographical changes in the cord incident to bruising have been considered. Besides these topographical changes, bruises of the cord also produce another important set of *structural* changes in the elements of the cord substances. These minute structural artefacts from bruising will be briefly alluded to now, while their more detailed description will be reserved for a subsequent paper, for these artefacts are liable to be misunderstood or mistaken for the results of pathological processes.

These minute structural artefacts occur in both the gray and in the white matter.

In the *gray matter* the principal structural artefact is the *peculiar rarefaction* or porous condition of the gray horns which has already been sufficiently described in Figs. 5, 58 to 61, and 64 (see also Drummond's case in Section VI). There are also occasionally various mechanical changes in the *ganglion cells* in bruised regions of the cord.

In the *white matter* there are minute changes in the *nerve fibers* and *neuroglia.* The nerve fibers show mechanical disintegration of the myelin, alterations in their caliber and in the thickness of the axis cylinders. A group of nerve fibers, while maintaining their proper direction, may be compressed together so as to stain differently and appear degenerated to the naked eye or under a low power. In fact, these mechanical changes in the nerve fibers have been mistaken for lesions of the cord. (See Feist's first case, Section VI.)

Bands of neuroglia may be squeezed together mechanically, and take on a very deceptive appearance suggestive of neurogliar thickenings from disease. Portions of the superficial neurogliar zone may be thrust inside of the cord and form suspicious little islands near the periphery, which might call to mind syphilis or some other chronic inflammatory process. Bits of the peripheral extremity of the posterior horn may be rarefied and spread out into the midst of the neighboring white matter in such a way as to give an entirely different appearance from the usual compact look of the horn in its proper place, and present such a confusing picture that the foreign mass may not be recognized as tissue of the posterior horn. The associated artefacts, whether topographical or minute, ought to correct any wrong impressions about such a condition of the posterior horn or neuroglia.

The occurrence of *cavities*, *clefts*, *splits*, and *hæmorrhages* from bruises of the cord has already been alluded to. Artificial hæmorrhages may fill up the central and the perivascular spaces surrounding the sulco-commissural vessels. Bruises may also produce collections of fluid and œdematous regions in the cord substances.

It may be suggested incidentally that it might be of importance to have in mind the possible artificial origin of certain hæmorrhages in the central nervous system in various medico-legal cases that might arise.

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* The material was hardened carefully in the usual way in Müller's fluid, and subsequently in alcohol. The celloidin-imbedded sections—cut in serial sets through the bruised regions in most of the cases—were stained with Weigert's hæmatoxylon method, but principally by the picro-acid-fuchsin method (described in Laboratory Notes of Technical Methods for the Nervous System by the writer in the *New York Medical Journal* for July 20, 1889). The drawings were all made from individual sections with the camera lucida, and are magnified from five to fifteen diameters.

When a diseased cord is bruised and the minute structural artefacts become mingled with or modify diseased areas in the sections, it often becomes an exceedingly difficult matter to recognize or understand the lesions, and to determine how much of the changes are due to disease and how much to artificial changes.

In a normal cord these minute structural artefacts are easy to recognize from their somewhat characteristic features, from the absence of disease process in their vicinity, and from their usual association with topographical artefacts of the gray and white matters. It is well to note, however, that under certain circumstances a bruise may produce minute changes in the cord substances, and yet not be severe enough to change their topography.

GENERAL REMARKS.

Thus it will be seen in this section that minor topographical artefacts, complex duplications of the cord, and deceptive minute changes may be produced in the cord substances—may be produced at any time at the autopsy by careless technique or bruising.

In the next section we shall find that just such artefacts are described as congenital malformations or as the results of pathological processes, and that these artefacts are also rather largely and attractively speculated upon in their supposed relations to the production of disease processes.

EXPLANATIONS OF THE PLATES.

PLATE I.—Sections from a case bruised unawares at the autopsy. The case presented obscure nervous symptoms, and the artificial changes were noted in the autopsy protocol without being attributed to bruising. Figs. 1 and 2 show how the gray segments have been split open by deflected bands of white matter the fibers of which pass horizontally in the section, as shown by the wavy lines in the section. Figs. 3 and 4 show rather extensive artificial deformities of the gray matter, with extra portions of the same driven up from other levels, and various columns of deflected white fibers. Figs. 5 and 6 show the appearances of sections from the surfaces of segments, where in the fresh state after incisions the cord substances have welled up out of the interior.

PLATE II.—Sections from various cords, unintentionally bruised at the autopsy, found in the laboratory collection of spinal cords. In Fig. 7 part of the left posterior horn, with the column of Clarke, has been thrust out into the anterior fissure. In Fig. 10 the anterior horns have been fused together in a common horseshoe-shaped mass; *x x*, columns of Clarke; *c*, central canal. Fig. 12 shows how a limited column of deflected white fibers have indented the anterior horn.

PLATE III.—Sections from the cord in a case of chorea, bruised unawares at the autopsy. There were no external gross changes in the cord at all from the bruise. In Fig. 13 there is a deficiency in the gray matter of the posterior horns, which appears in the serial sections above, in Figs. 14 and 15, and apparently extra portions of gray matter; the horizontally dispersed nerve fibers in the white matter show very well in all of these sections. In Fig. 15 the mechanically dispersed nerve fibers surround the dislocated gray fragment in concentric lines.

PLATE VII.—Gross appearances of bruises of the spinal cord. Drawn from hardened specimens. Figs. 21 and 22 show extrusions of the cord substances which look very much like tumors. In Fig. 21 the cord was bruised unawares at the autopsy. In the remaining specimens the bruising was done intentionally. In Fig. 23 the cord has been very severely bruised, so as to telescope different segments together, producing duplication of the organ. A number of small extrusions of the cord substances have produced multiple wartlike excrescences on the surface of the cord. Fig. 24 shows the transit of a displaced plug of white matter from one region in the cord to another level.

PLATE VIII.—Sections from an experimental bruise of the spinal cord in the lower cervical region. Figs. 25 to 30 are taken from a serial set of sections from the lower cervical region, and show a progressive disfiguration of the right anterior horn, together with the characteristic deflections of masses of nerve fibers in the white matter. An extra or dislocated fragment of gray matter appears in Figs. 29 and 30. The wavy lines in these figures, as well as in all of the succeeding plates, indicate the deflected bundles of white matter passing horizontally or obliquely through the sections.

PLATE IX. — Microscopical appearances of experimental bruises of the spinal cord. Fig. 31 is the last member of the preceding series. Fig. 32 shows how nearly all of the left gray segment has been shifted to another left, while the right gray horns are not at all damaged. In Fig. 33 the left horns are so uniformly compressed that hemiatrophy is suggested. Fig. 34 shows separation of portions of the anterior horns by deflected bands of white fibers. Fig. 35 shows a small bit of dislocated gray matter from another level lying between the asymmetrical gray horns. The white matter in all the sections shows the same changes as in the preceding plate.

PLATE X. — Microscopical appearances of experimental bruises of the spinal cord (continued). In Fig. 37 the anterior horns and gray commissure are absent, and some of this missing gray matter appears in Fig. 39, giving the appearance of a third anterior horn between the two normally situated anterior horns. The sections are selected from a serial set, and show especially well the horizontal and other dispersions of the white matter from bruising. In Fig. 39 note the little peripheral nodular masses of bruised fibers which have burst through the periphery of the cord.

PLATE XI. — Microscopical appearances of experimental bruises of the spinal cord (continued). In Fig. 40 minute structural artefacts in the nerve fibers in the column of Goll, incident to bruising, simulate a patch of sclerosis, The spurlike projection of gray matter in Fig. 40 is broken up into fragments in Fig. 41. Figs. 43 to 45 show one of the most common and uniform effects of bruising—viz., rupture of the centrally situated cord substances, with dislocation of the gray commissure and separation of the gray segments on either side.

PLATE XII.—Microscopical appearances of experimental bruises of the spinal cord (continued). In Figs. 46 and 47 (from serial sections) the source of the extra fragments of gray matter in 46 can be seen in 47, where the gray matter is deficient on the left side. In Figs. 49, 50, and 51 (from serial sections) the absent horn in Fig. 49 appears in Figs. 50 and 51. Fig. 49 should be reversed from right to left.

PLATE XIII.—Sections from experimental bruises of the spinal cord (continued). Fig. 52 shows dislocation of the right anterior horn and dispersed white fibers passing obliquely instead of horizontally through the section. Fig. 54 shows how nearly all of the gray matter may be driven to another region, tending to produce more or less of a duplication of the cord in the new level. In Fig. 55 the whole of the white matter is occupied by deflected nerve fibers. Fig. 56 belongs among the artificial duplications of the cord in the next plates.

PLATE XIV.—Artificial duplication of the spinal cord resulting from a bruise. Figs. 57 to 61 are from a serial set of sections through a bruise of the cord, in which a segment from the

Plate I.

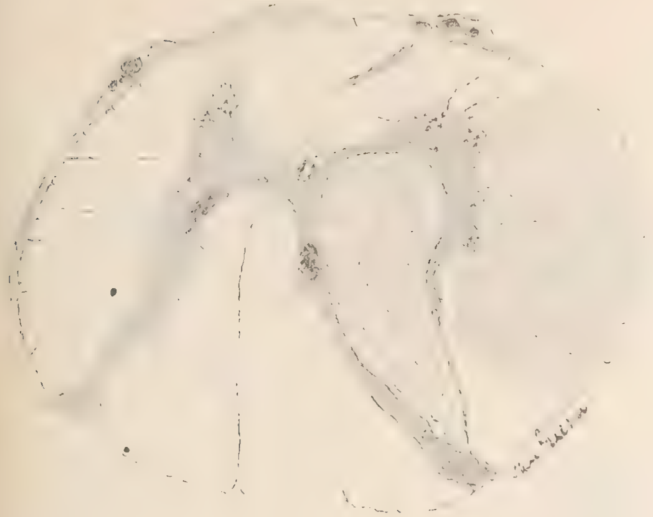


Fig. 1

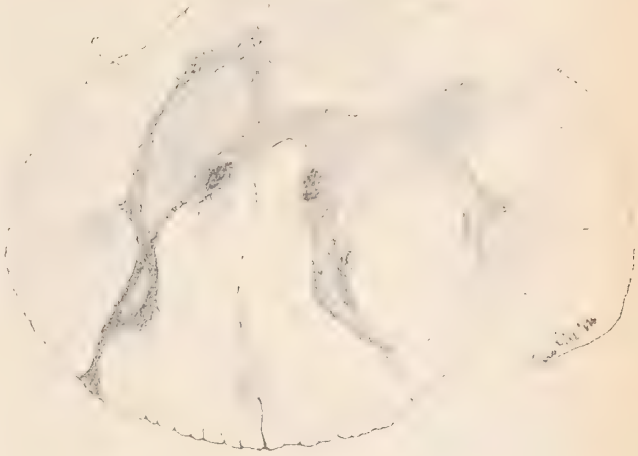


Fig. 2

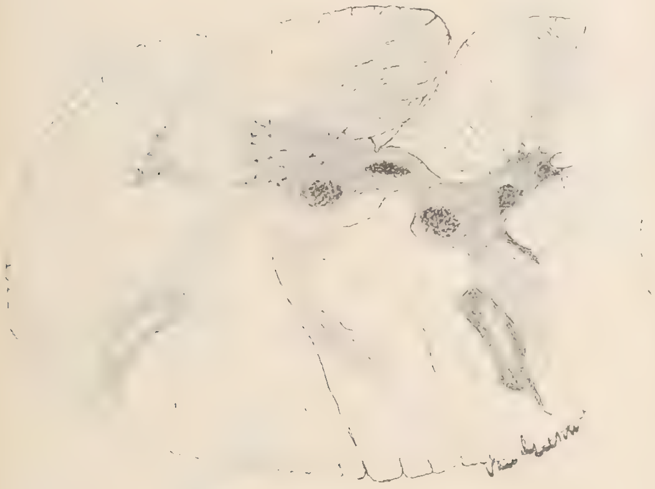


Fig. 3

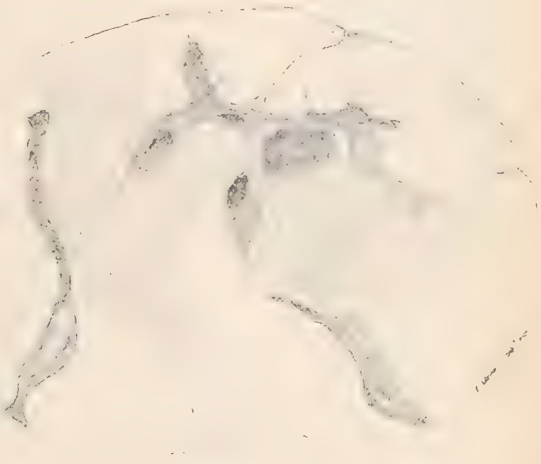


Fig. 4

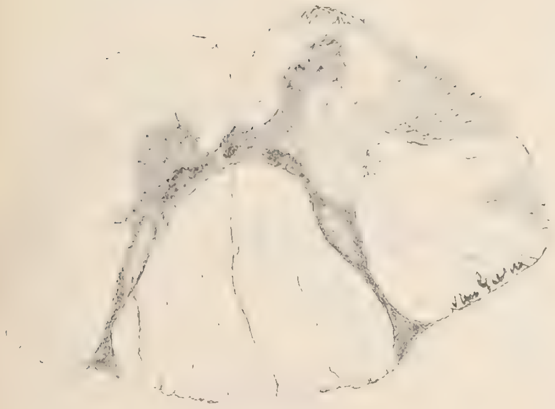


Fig. 5

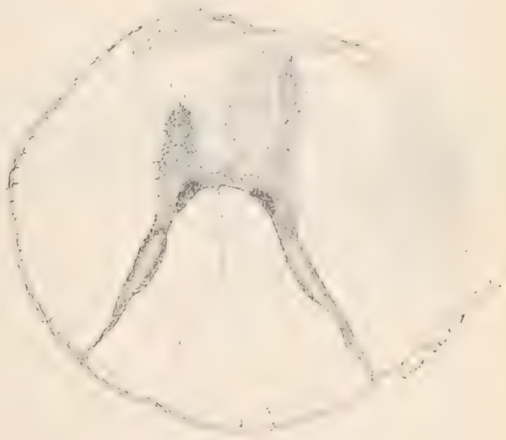


Fig. 6

Sections from a case with obscure spinal symptoms bruised unawares at the autopsy.

Plate II.

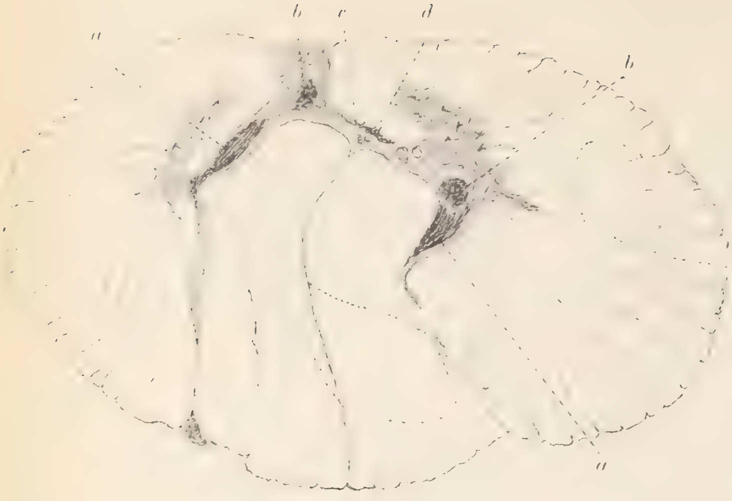


Fig. 7

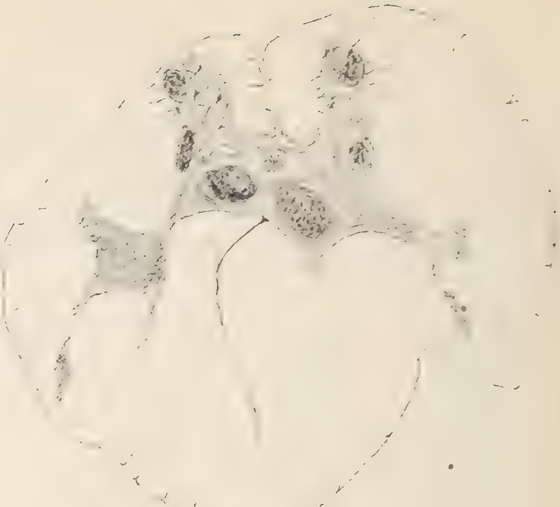


Fig. 8

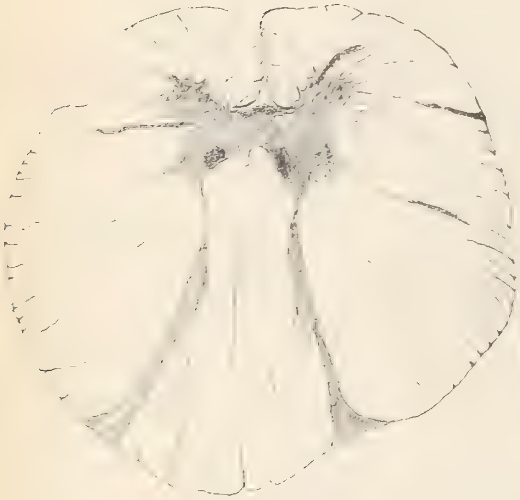


Fig. 9

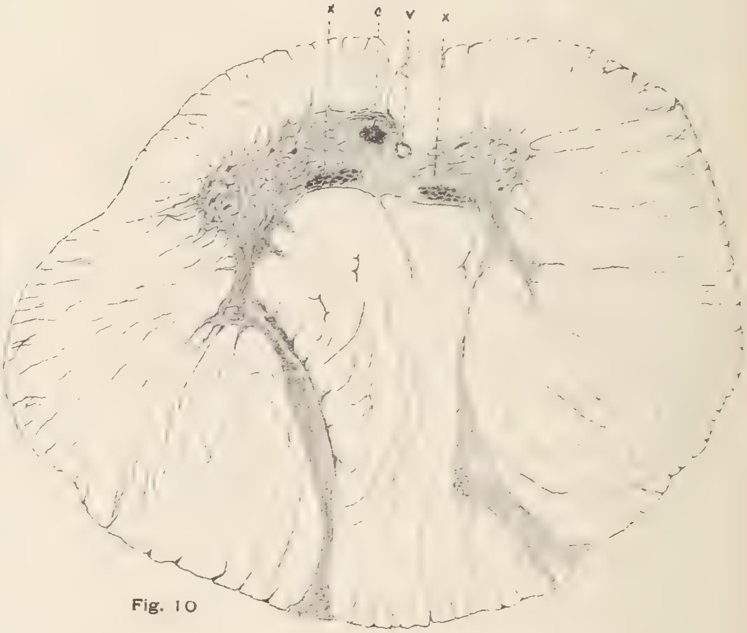


Fig. 10

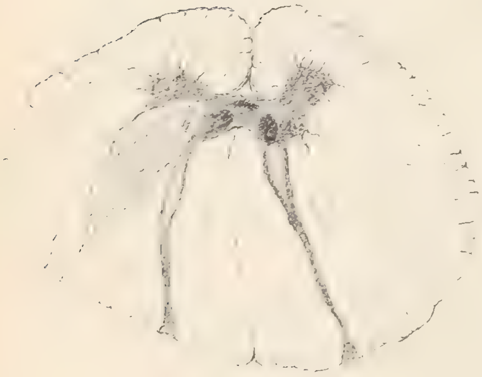


Fig. 12

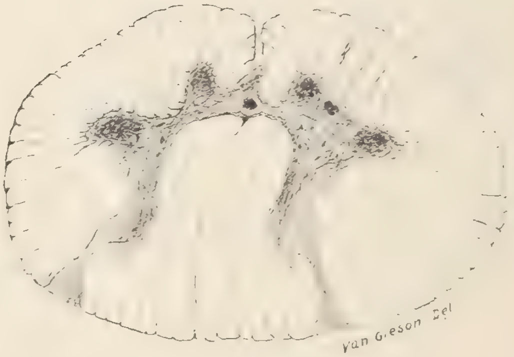


Fig. 11

Sections from various cords, unintentionally bruised at the autopsy, found in the laboratory collection of spinal cords.

Plate III.

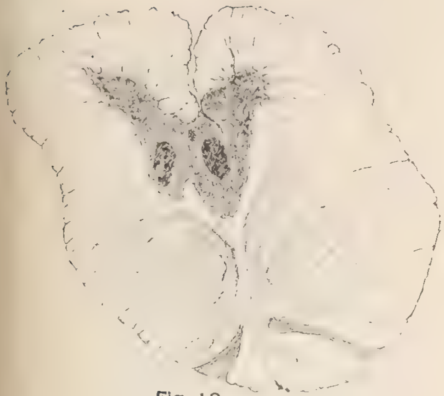


Fig. 13

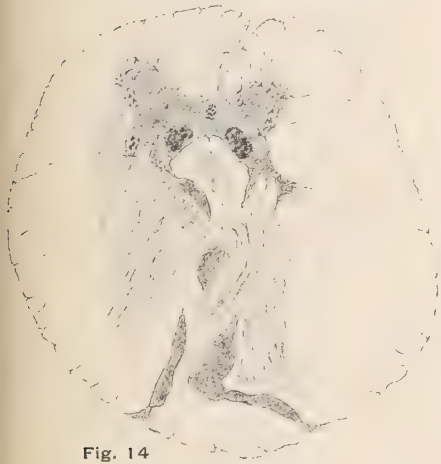


Fig. 14

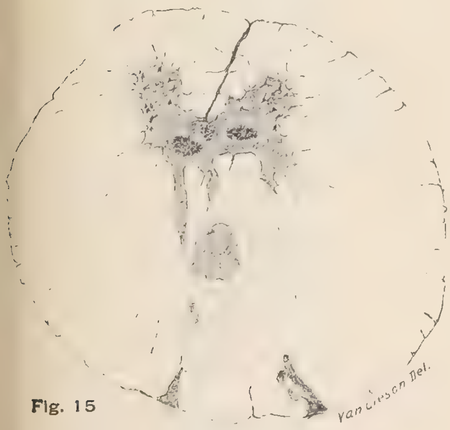


Fig. 15

Sections from the cord in a case of chorea, bruised unawares at the autopsy.

Plate VII.

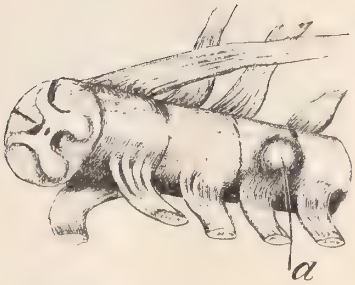


Fig. 21

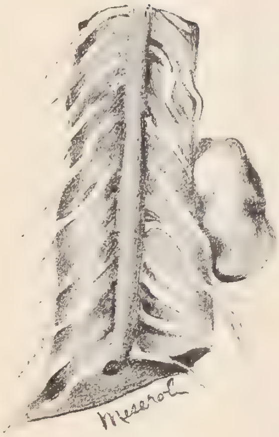


Fig. 22

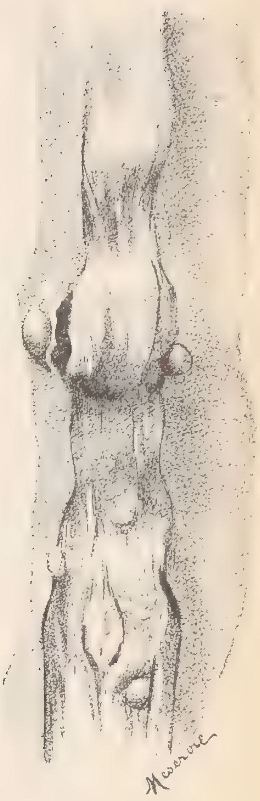


Fig. 23

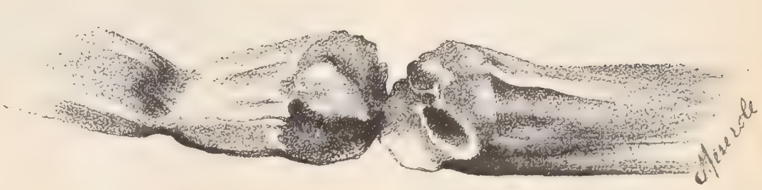


Fig. 24

Gross appearances of bruises of the spinal cord.

Plate VIII.

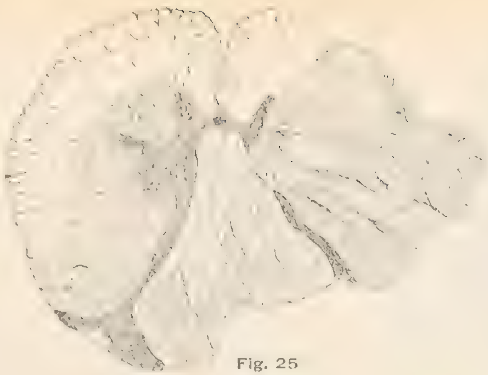


Fig. 25

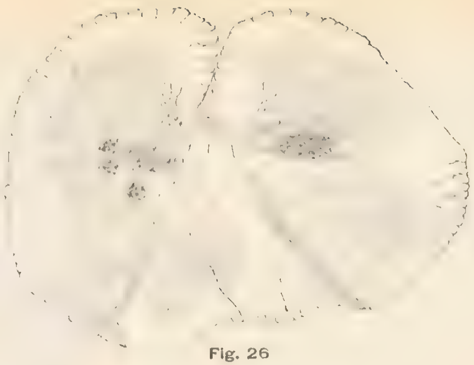


Fig. 26

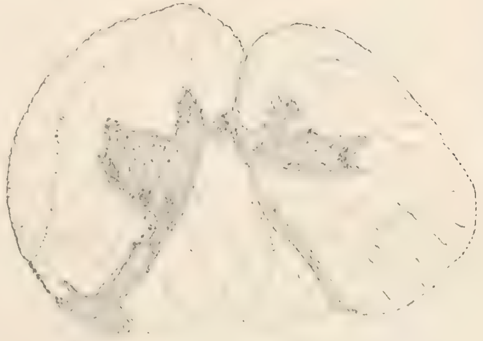


Fig. 27

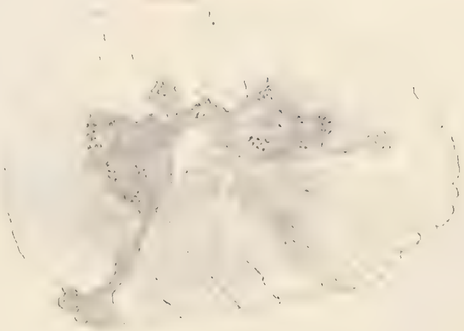


Fig. 28

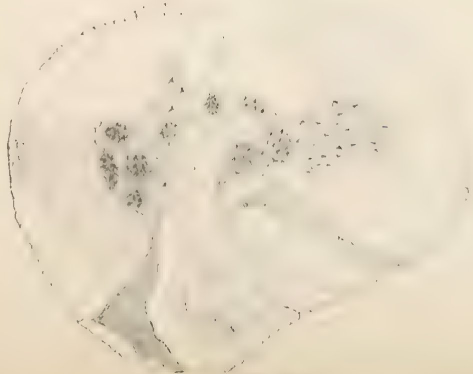


Fig. 29

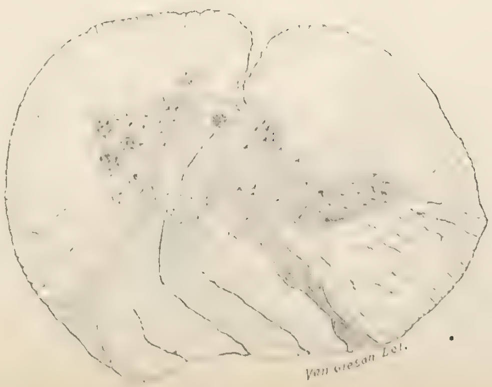


Fig. 30

Sections from an experimental bruise of the spinal cord in the lower cervical region.

Plate IX.

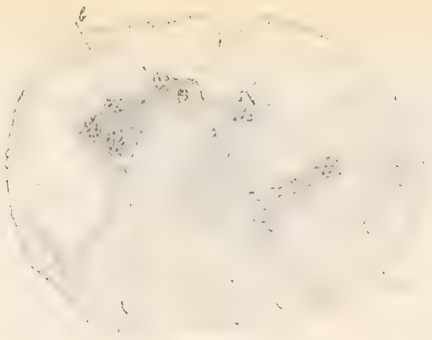
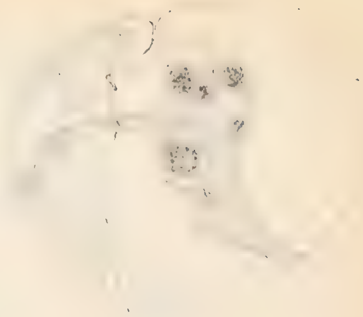


Fig. 31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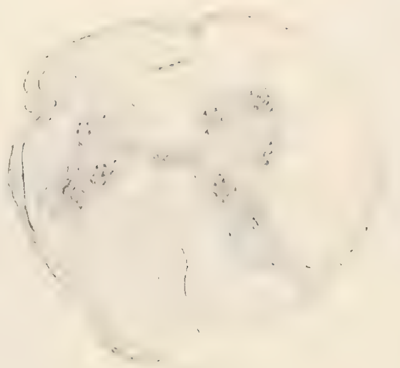
Fig. 33

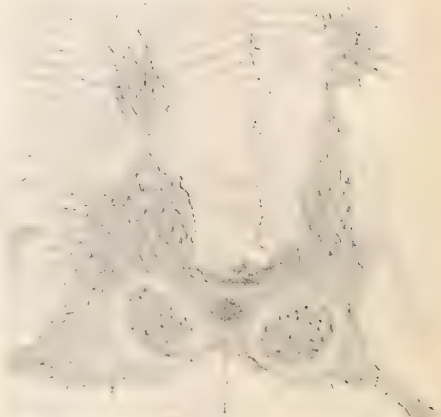
Fig. 34

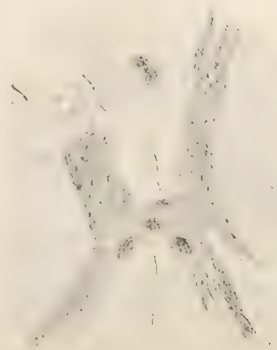
Fig. 35

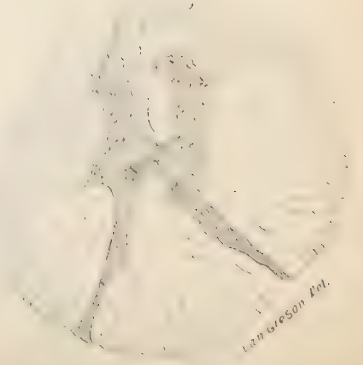

Fig. 36

Microscopical appearances of experimental bruises of the spinal cord.

Plate X.

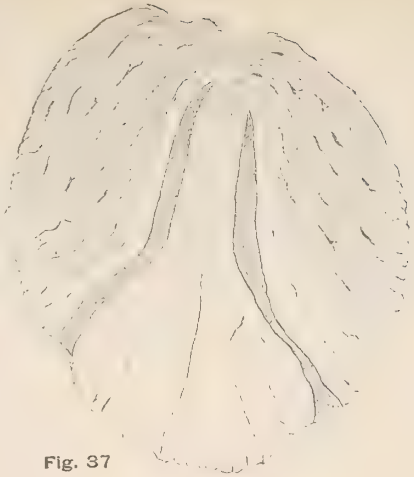
Fig. 37

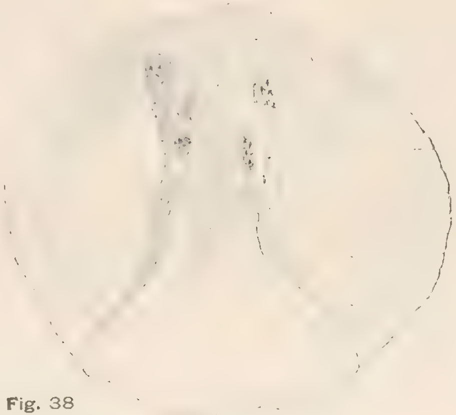
Fig. 38

Plate XI.

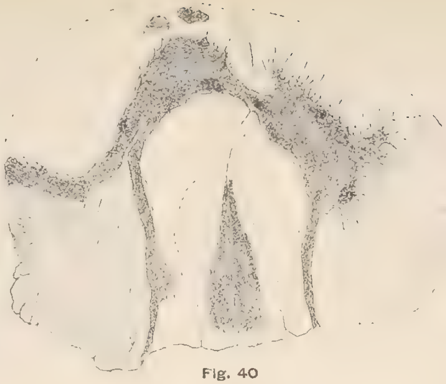
Fig. 40

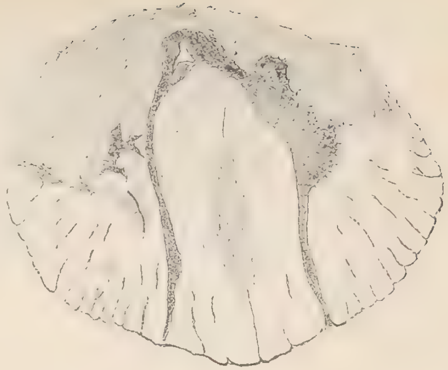
Fig. 41

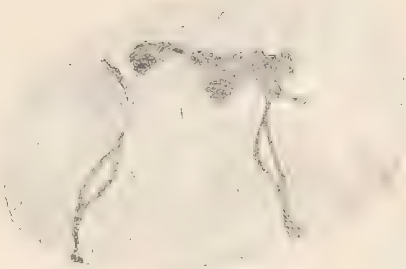
Fig. 42

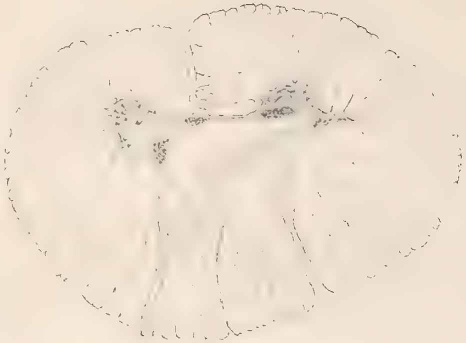
Fig. 43

Fig. 44

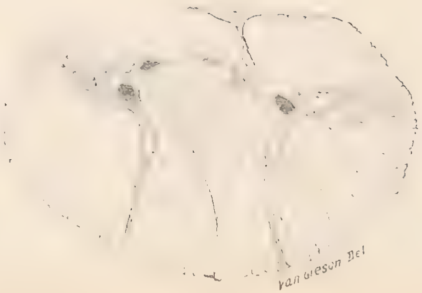

Fig. 45

Plate XII.

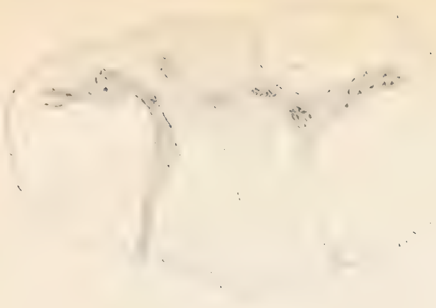

Fig. 46

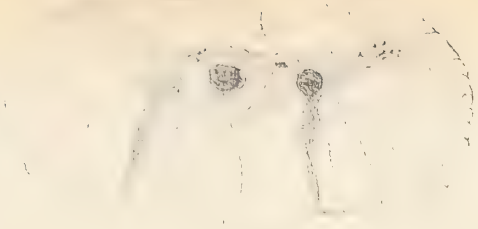

Fig. 47

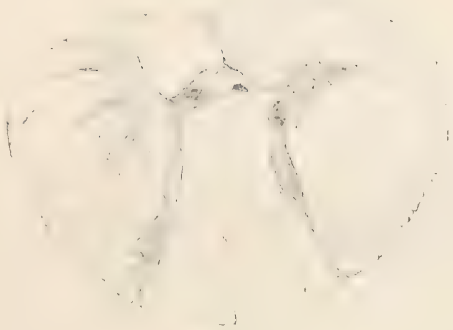

Fig. 49

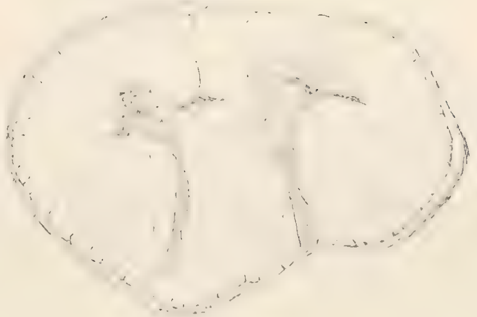

Fig. 48

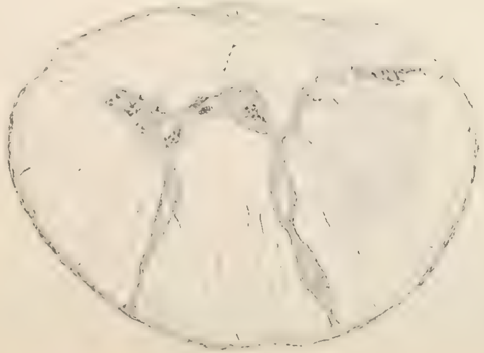

Fig. 50

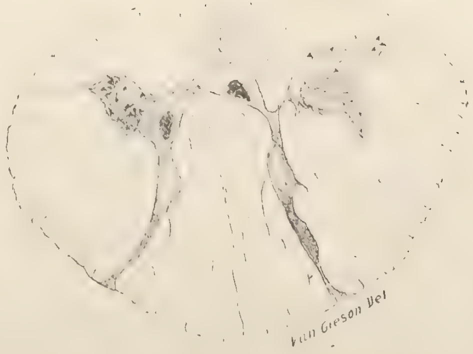

Fig. 51

Microscopical appearances of experimental bruises of the spinal cord (continued).

Plate XIII.

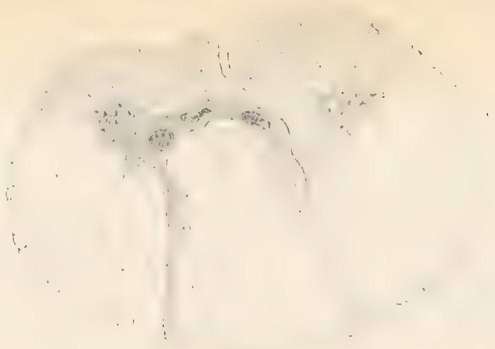

Fig. 52

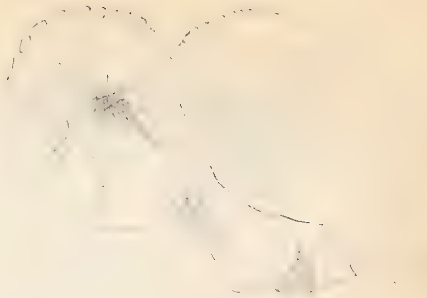

Fig. 54

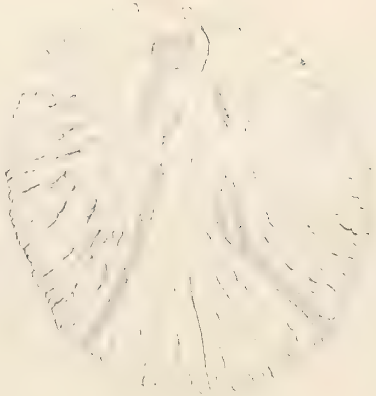

Fig. 53

Fig. 55

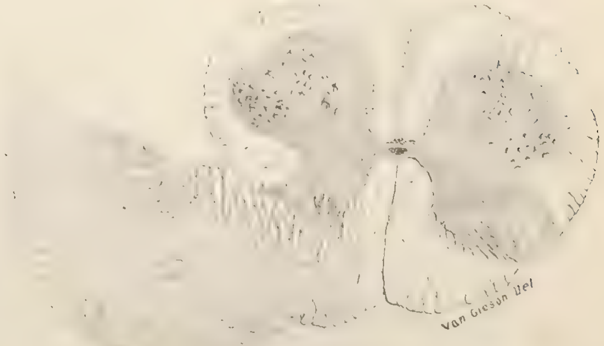

Fig. 56

Sections from experimental bruises of the spinal cord (continued).

Plate XIV.

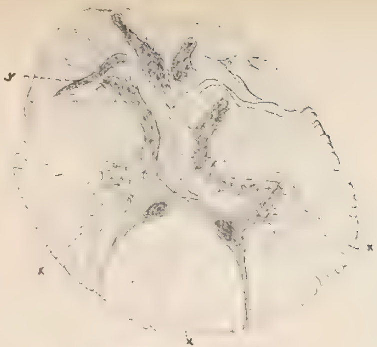

Fig. 57

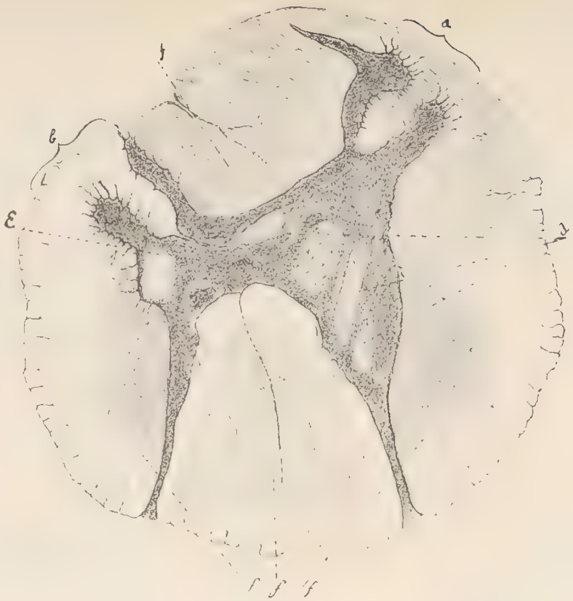

Fig. 61

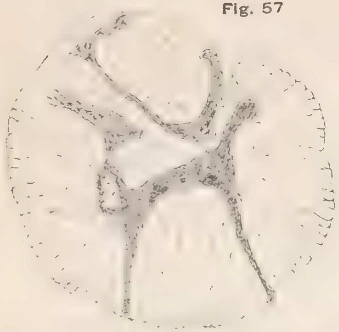

Fig. 60

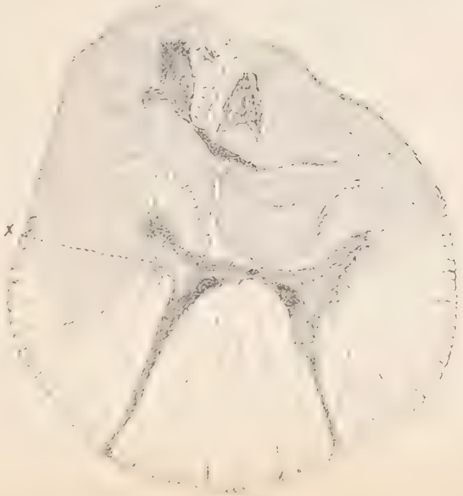

Fig. 58

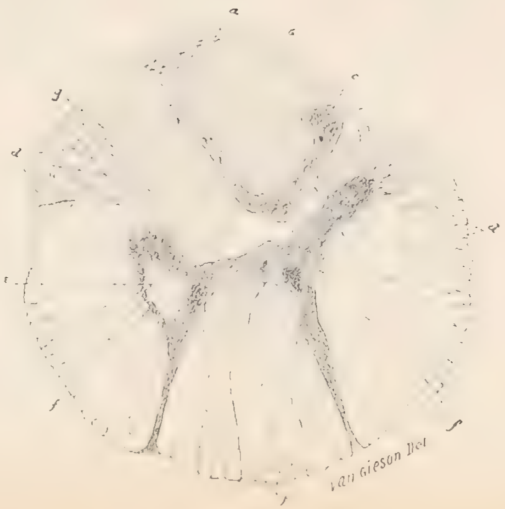

Fig. 59

Plate XV.

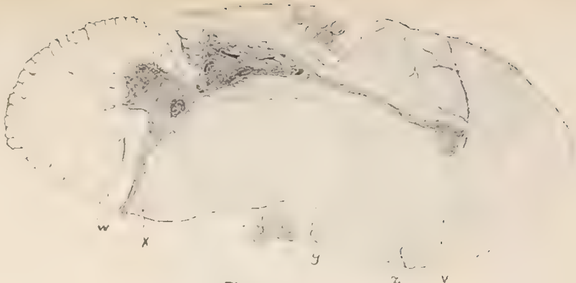

Fig. 62

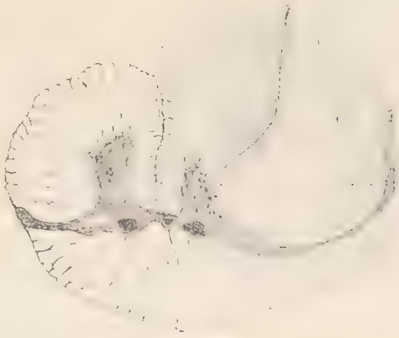

Fig. 63

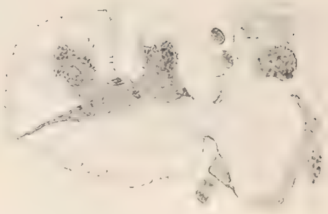

Fig. 66

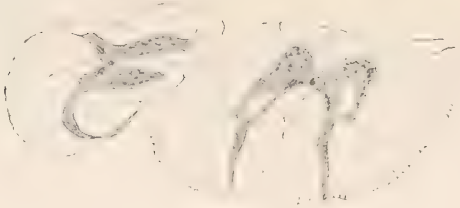

Fig. 64

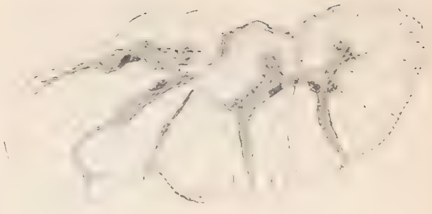

Fig. 65

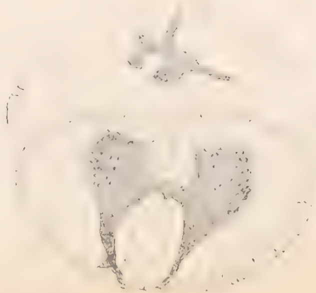

Fig. 67

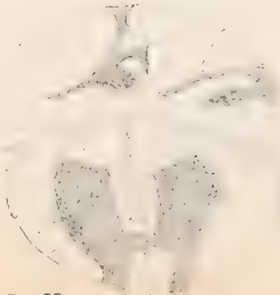

Fig. 68

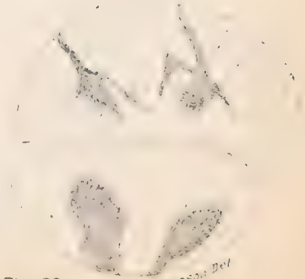

Fig. 69

Plate XVI.

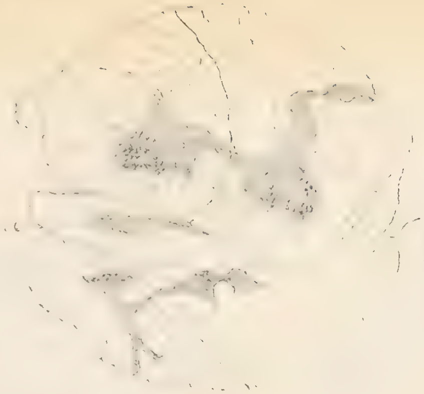
Fig. 70

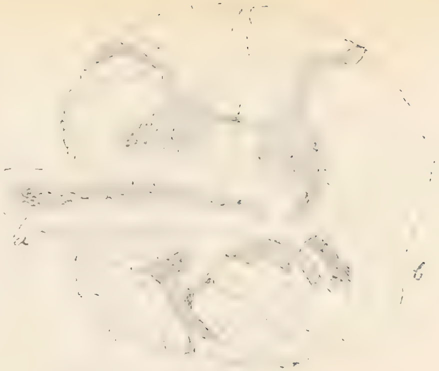

Fig. 71

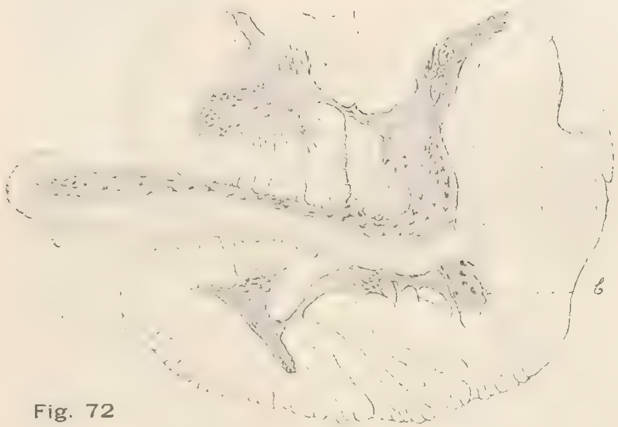

Fig. 72

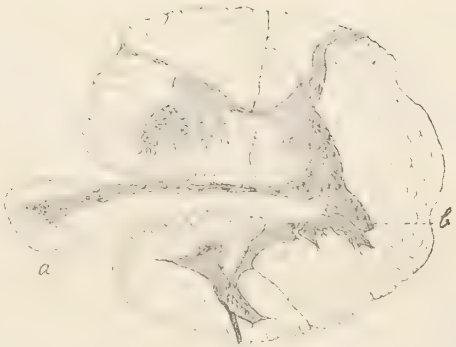

Fig. 73

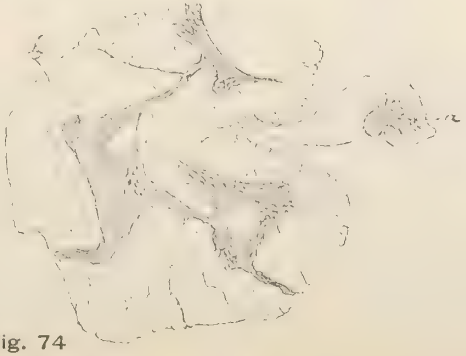

Fig. 74

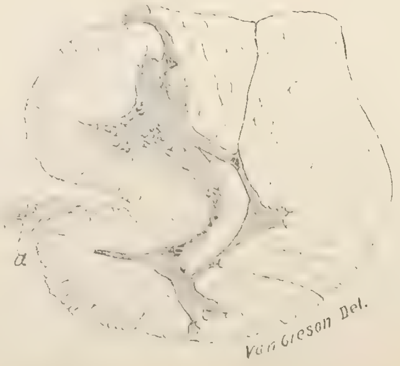

Fig. 75

Artificial duplication of the spinal cord due to bruising.

Plate XVII.

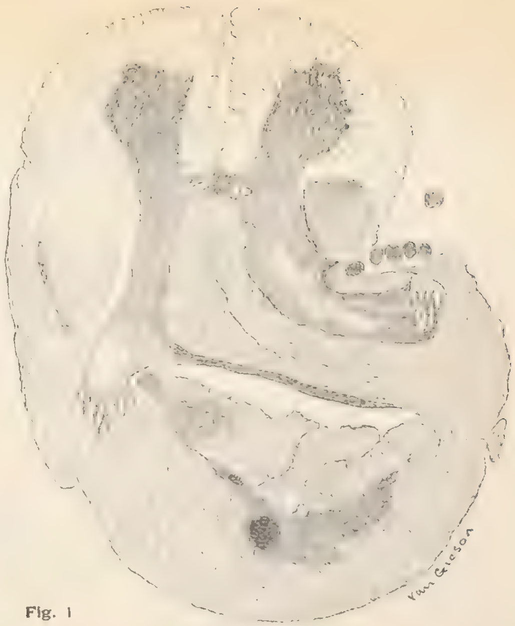

Fig. 1

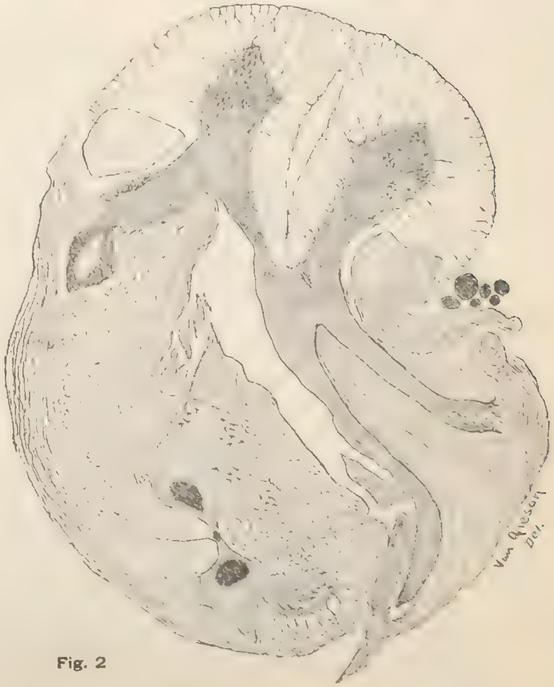

Fig. 2

Seguin's case. Duplication of the cord from an dorsal region has been dislodged and telescoped down through the anterior fissure (see Fig. 58) to another level in the cord. The displaced segment has a pair of anterior horns which eventually (in Fig. 61) become fused two by two (Fig. 61, *a*, *b*) with the anterior horns of the cord at the new level.

PLATE XV.—Sections from several forms of artificial duplications of the spinal cord produced by bruises. Figs. 62 (see Fig. 17) and 63 (see Fig. 18) show extrusions of the white matter resulting from an attempt to produce doubling of the cord. *The dark spots in the right anterior horn in Fig. 62 indicate hæmorrhages produced by the bruising.* Fig. 66 is from a section from the cord in Fig. 22. Figs. 64 and 65 (from the cord in Fig. 19) show an exceptionally perfect form of artificial duplication. Figs. 67 to 69 show a telescoping together of the first dorsal and lowermost cervical segments. Changes in white matter in Figs. 64 to 69 are not indicated.

PLATE XVI.—Artificial duplication of the spinal cord due to bruising. The gross appearances are shown in the lower swollen region in Fig. 23. Portions of the dorsal and cervical cords have been fused together. One of the dorsal horns has been dislocated and thrust out laterally at *a*. The right-hand cervical horn sends out a long, slender portion of gray matter, which becomes continuous with *a*. The fragment *b* also belongs to the right cervical horn (Fig. 73). In Fig. 75 a dorsal and a cervical horn of the same side have disappeared, and the remaining cervical and dorsal horns and their gray commissures are joined together.

PLATE XVII.—Seguin's case. Reported by Delafield. Two consecutive spinal segments have been telescoped together by a bruise of the cord. The twelth dorsal segment, with its deformed gray segments and dispersed white matter, has been thrust down over the posterior surface of the first lumbar segment, which is but comparatively little deformed except in the lengthening out of the posterior horns in Fig. 2. The two areas of descending degeneration in the crossed pyramidal tract, in the lumbar segment, can not be recognized in the dorsal segment, because of the mutilation of the white matter. (The columns of Clarke in the transported segment are represented by the darkly shaded areas in the gray matter.)

(*To be concluded.*)

SIMULTANEOUS DISLOCATION OF THE FIRST AND SECOND PHALANGEAL JOINTS OF THE MIDDLE FINGER.

BY LEWIS A. SAYRE, M.D.

THE simultaneous dislocation of the first and second phalangeal joints of a finger is so rare an occurrence that I have thought it worth while to report the following case:

On August 17th G. G., carpenter, fifty-three years old, while standing on a large case and lifting a heavy weight, felt his foot slip, and, throwing his hand forward and downward, to prevent striking on his face, put nearly his whole weight on the end and side of the middle finger of his left hand. It is probable that he bore more weight on the finger than common, as the last two joints of the left third finger had been amputated at some previous time.

He had pain in the finger at once, and was unable to use it. He was brought to my office a few minutes after the accident, and I found the middle phalanx of the left middle finger resting on the dorsum of the proximal phalanx. Longitudinal traction seeming only to bind the bones more firmly in their abnormal position, I therefore bent the finger strongly backward, while I pressed my thumbs firmly against the back of the injured joint, which caused the bones to slip readily into place, and I then discovered, which had heretofore escaped my notice, that the distal phalanx was also dislocated backward, this being the first time that I had ever seen this occurrence of double backward dislocation of two joints in one finger.

I easily reduced this second dislocation by bending the tip of the finger backward while I pressed my thumbs strongly against the back of the joint. The finger was kept strongly extended after this by a strip of adhesive plaster running from the base of the middle finger on its palmar surface up to the tip of the finger and thence down the back to the middle of the hand, where it was securely held by a roller bandage.

WEDGE-SHAPED RESECTION OF THE FOOT FOR THE RELIEF OF OLD CASES OF VARUS.*

BY G. G. DAVIS, M.D., M.R.C.S.,

SURGEON TO ST. JOSEPH'S HOSPITAL,
AND ASSISTANT SURGEON TO THE PHILADELPHIA ORTHOPÆDIC HOSPITAL.

IN the practice of orthopædic surgery old neglected cases of club-feet occasionally present themselves which require radical methods of treatment if any permanent and satisfactory result is to be obtained. In the case of young and growing children conservatism yields brilliant results, but when development and growth are comparatively slow or have practically ceased, and the bones have become hardened in their deformed and distorted condition, then it is that operations on the bones themselves are to be resorted to. The rapid changes that take place in the growth of the feet in children up to the age of about seven years, together with the comparative softness and laxity of the tissues, both bony and fibrous, usually obviate the necessity of resorting to any more severe measures than tenotomy with forcible straightening and a careful use of appropriate apparatus. For such cases operations on the bones themselves certainly should be resorted to only very exceptionally, if at all. From the ages of seven to about twelve years the deformity is apt to be more marked and yields less readily to mild measures. In that case more vigorous ones, such as operation by the open incision of Phelps or forcible straightening by means of manual force or appropriate instruments, such as Thomas's wrench or possibly the milder forms of excision, may be resorted to. The cases which occur in patients from the age of twelve years upward are apt to be so stubborn as to call for more radical methods of treatment. Any attempt to remedy the deformity by simply dividing the fascias and tendons and gradual stretching by means of apparatus consumes time, causes unnecessary pain, and will, unless the case be a comparatively mild one, only end in failure. Two plans have been suggested for this sort of cases—forcible straightening by means of instruments called club-foot stretchers, and resection of the tarsal bones. Wolff and Krauss are strong advocates of manual correction and oppose resection. Bradford and Lovett, in their work on orthopædic surgery, say that they "most thoroughly concur in Wolff's statement that forcible rectification is able to correct and cure the severest forms of club-feet, but they have found mechanical correction more reliable than simple manual force." Krauss states that "there is no conceivable form of club-foot in which tarsal resection is justifiable, except it be in the case of one that is persistently painful in an old subject, and in which there is no prospect of a good result from orthopædic treatment." As regards Wolff's treatment by tenotomy of the tendo Achillis and manual straightening, with subsequent fixation in plaster of Paris, I need only say that in this country we occasionally have cases that one is unable to straighten satisfactorily with simple manual force, notwithstanding that we have all the advantages connected with our clinic that genuine imported German muscle can give. Bradford and Lovett also state that they have found other (mechanical) aid desirable. The effect of the concurrence of these latter two authors with the views of Wolff is also somewhat weakened by their subsequent statement that they "have been enabled to obtain a number of excellent results and have experienced no drawbacks in performing this operation"—that is, tarsal resection. As regards Krauss's limiting the operation to persistently painful cases in old subjects, I simply beg leave to differ with him and state my belief that the operation is a perfectly proper one when performed solely to lessen the deformity and improve locomotion.

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* Read before the Philadelphia County Medical Society, June 22, 1892.

Tarsectomy may be done in two ways: either by the removal of one or more separate bones, such as the cuboid, scaphoid, or astragalus, or by removing a certain amount of bony tissue, irrespective of the joints. This latter constitutes what is known as wedge-shaped resection. The removal of the cuboid bone alone has been generally abandoned as inefficient, and the preferred operations are either wedge-shaped excision or removal of the astragalus, with or without the resection of the external malleolus. Of these two operations, wedge-shaped resection is the more radical, and is, I believe, the more suitable for the very obstinate cases. The objections to the removal of the astragalus alone are that it destroys the ankle joint and fails to rectify the deformity and properly unfold the foot. Of course, this unfolding can be somewhat increased by division of the tendons and contracted plantar tissues; but even then the sole is not a flat one and the deformity is still marked. After the operation of the removal of the astragalus the condition of the foot, with care, becomes somewhat better rather than worse, and quite a useful member is obtained. In wedge-shaped resection, by excising a sufficient amount of bone, the sole of the foot can always be made perfectly horizontal and the toes to point directly forward. The objections urged against it are the severity of the operation and the amount of shortening of the foot which it occasions. I do not believe either of them are serious. The risk to life is very slight, and the amount of shortening, although marked in comparison to a healthy foot, is not so much as to seriously interfere with walking. When one considers the severity of the deformity for which the operation is done, the results obtained are very satisfactory indeed.

The first case which applied for treatment was that of a young man aged twenty-one years. He came because of the discomfort he experienced in walking and of the deformity which was present. The trouble had existed since infancy, and he had never undergone treatment of any sort. The right foot only was affected, the sole being directly vertical and pointing inward on a line passing through the two malleoli. The protuberance of the tarsal bones was very marked, and he walked principally on the cuboid bone, over which had developed a large bursa. This foot is shown in Fig. 1. The resistance to all attempts at straightening was so obstinate that it was deemed useless to attempt any procedure other than the removal of a considerable amount of bone. The plantar fascia having been divided subcutaneously, an L-shaped incision was made on the outer side of the foot from in front of the external malleolus to the posterior end of the fifth metatarsal bone. Through this incision the fibrous tissues were raised from the tarsal bones and the peroneus brevis muscle displaced backward. With a chisel the cuboid bone was divided near its anterior third and the section carried between the scaphoid and cuneiform bones. A posterior section was then made through the anterior portion of the calcaneum on the outer side of the foot and carried inward just in front of the ankle joint through the neck of the astragalus. It was found still impossible to completely straighten the foot, and the remainder of the cuboid, together with the three cuneiform bones, were removed from the anterior portion of the wound, and an additional piece from the anterior portion of the calcaneum with the remainder of the astragalus from the posterior portion. The foot was then brought straight and the tendo Achillis divided, but without much influencing the position of the heel. The wound was dressed antiseptically and the foot placed on a wooden splint with a sole-piece fixed to an internal side splint, to which was attached another on which the back of the leg rested. Healing of the deep parts took place at once, and the only delay was occasioned by the superabundant tissues on the dorsum of the foot preventing a proper approximation of the superficial cut. The ultimate result of the operation is shown in Fig. 2, taken from a cast made before the swelling of the parts had subsided. Thirteen months have now elapsed since the operation, and we find a shortened foot pointing directly forward, with a small amount of motion at the ankle. The sole of the foot is flat, and the patient can walk long distances with perfect comfort, and he says the only thing which attracts attention is the lacing of his shoe, which, on the operated foot, extends to the toes.

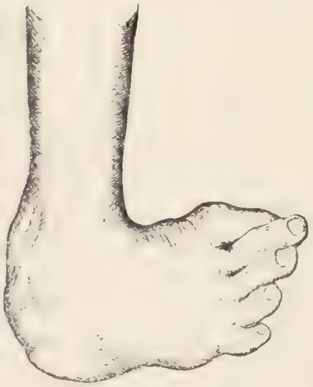

Fig. 1.

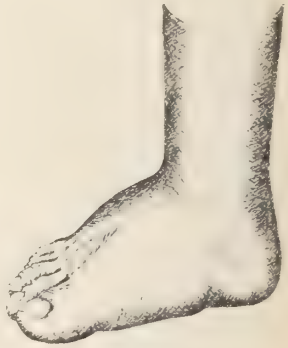

Fig. 2.

The second case was that of a youth aged twelve years. He had marked varus of both feet, and was treated unsuccessfully in childhood by division of the tendons. The sole of the right foot was vertical and turned transversely to the antero-posterior axis of the leg. (See Fig. 3.) The deformity of this foot was much more pronounced than was that of the left, and for this reason wedge-shaped resection was done on it, while excision of the astragalus was done by Dr. Goodman on the other. The operation did not differ materially from the one already described, except that it was less in extent. The anterior section passed through the cuboid bone and removed the posterior portion of the cuneiform bones. The posterior section went through the anterior portion of the calcaneum and neck of the astragalus close up to the ankle joint. The same dressing was applied as in the previous case, and healing progressed satisfactorily. The result is shown in Fig. 4, from photographs taken seven months after the operation. The sole of the foot is placed perfectly flat on the ground, and is readily brought at a right angle to the leg. Walking has been much improved and is painless.

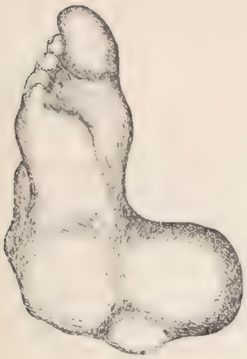

FIG. 3.

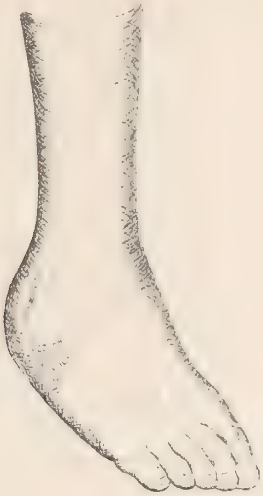

FIG. 4.

The third and fourth operations were performed on the same patient, a young man aged twenty-one years. He had had no previous treatment, and both feet were affected to the same extent. They pointed directly inward, the soles being perfectly vertical. (See Figs. 5 and 6.) The first operation was performed six months ago, and the second one five weeks later. One foot healed up nicely, but in the other a sinus persisted and discharged several spicules of bone. An inflammation occurred on the inner side of the foot, which, being incised, gave exit to a couple of drachms of pus mixed with thick serum, such as would come from a bursa or sheath of a tendon. It then healed up. This occurrence delayed healing and prevented him from using the limb as soon as he otherwise would have been able to do. In one of the feet of this last patient the anterior and posterior tibial tendons, as well as the tendo Achillis and plantar fascia, were divided, but, reposition having been found impossible, the case was finished with a wedge-shaped resection. The amount of bone removed in each foot was about the same, and included the tarsal bones from the metatarsus in front to a line drawn through the neck of the astragalus, just in front of the ankle joint, and taking off a small piece of the antero-external portion of the calcaneum. The plantar fascia and tendo Achillis were divided, but the heel in one foot particularly did not come down so well as was desired. The anterior portion of one calcaneum was tilted down into the sole of the foot and made a projection which is still visible. (See Fig. 7.

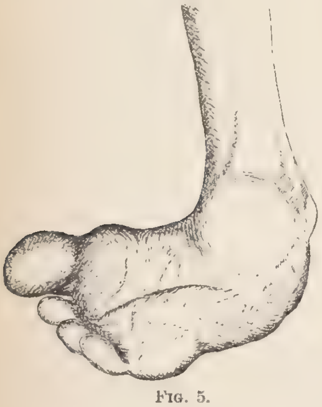

FIG. 5.

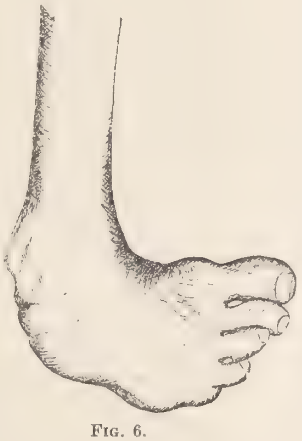

FIG. 6.

(In a later case I chiseled this projecting piece off at the time of the operation.) In some of these cases the heel is so drawn up and distorted that it is almost impossible to obtain a perfect position, no matter what is done. Figs. 7 and 8 are from casts taken five months and a half after the operations. The patient walks without pain and is steadily improving. In cases not of the worst character, but still bad enough to demand operation on the bones, I believe a small wedge-shaped resection to be preferable to a removal of the astragalus, as it seems to me to leave a more desirable foot. In wedge-shaped resection, the foot after the operation improves rather than deteriorates, and the muscular tone returns to a great extent to the wasted leg muscles, so that the patient becomes able to move his toes, and the limb increases in strength and size. The operation lessens the deformity to a very marked extent, and the objectionable reel-foot method of locomotion is done away with. After the splints are removed and the wound itself is healed, an apparatus with a steel sole-plate and side irons is applied, and an elastic band used to keep the foot flexed at the ankle. If, as is found in some cases, the knee joints are loose and the atrophy of the thigh muscles marked, the patient will walk much better if the apparatus is continued up above the knee and firmly strapped around the thigh, a hinge being made in the braces opposite the knee. The incision in the last cases was a curved one from in front of the external malleolus to the tuberosity of the fifth metatarsal bone. One is not able to judge of the severity of the deformity solely by the position of the foot, as much depends on its resistance to the efforts made to correct it. It is far more marked in some cases than in others, and is usually proportionate to the age of the patient.

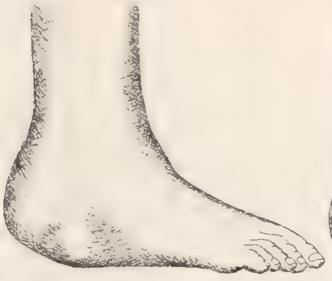

FIG. 7.

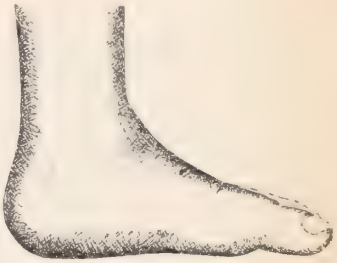

FIG. 8.

A Public-spirited Citizen.—It is stated that, the British Admiralty having refused to furnish the city of Cork with an old hulk that could be used for a floating hospital for cholera patients, Sir John Arnott, a resident of that city, at once offered a vessel for the purpose.

KUMYSGEN.

By WILLIAM DAVIS, M. D.,
ST. PAUL, MINN.

There is a growing tendency on the part of the most enlightened members of the medical profession to pay more and more attention to the matter of diet in certain diseases, and to rely less and less upon the use of drugs. Even twenty years ago, when the Prince of Wales passed through a severe attack of typhoid fever, it was the boast of the principal physician in attendance—the late Sir William Gull, I think—that the prince received but two or three doses of medicine during the whole course of the disease, reliance being had upon proper feeding and hygienic measures. Nor is this supplanting of medicine by diet to be looked upon as an evidence that the healing art is declining; there are not a few diseases where food becomes medicine and outranks all other medicines in importance. For instance, in the diarrhœal diseases of children, what can astringents, opiates, or antiseptics do to relieve the inflamed and irritable digestive tract compared to a bland food whose digestion and assimilation calls for the least possible exercise of the digestive powers?

Among the many artificially prepared foods to be found in the market at the present time there is one, but recently introduced, that deserves to be brought particularly before the attention of the medical profession. I refer to Carnrick's kumyss powder, or kumysgen, as it is called. As its name shows, its preparation was suggested by the great popularity of kumyss as ordinarily made from milk, and experience warrants the contention of its inventor that it has all the advantages of kumyss and more besides.

The difficulty with the digestion of milk by weak stomachs lies in the effort required to break up the curd which is at once formed by the action of the gastric juice. In the preparation of kumyss this is overcome by mechanical means, and the curd is finely subdivided and mixed with the whey in such a manner as to form a smooth liquid, or, pharmaceutically speaking, mixture. But the chief difficulty with kumyss is that its preparation is something of an art, and, as it will not keep, it must be made frequently. Now, in kumysgen this difficulty is entirely overcome. The curd having been dried and concentrated by evaporation of its water, its fine separation is easily accomplished, and in the powdered form in which it is prepared it readily makes a solution whose particles are much finer than in kumyss, while at the same time it is possible greatly to increase the nutritive power of the drink prepared.

Kumysgen is thus seen to be a food designed particularly for feeding when the powers of digestion and assimilation are at their feeblest, in those cases where as the result of acute or chronic disease the digestive organs give out altogether and the physician is obliged to exhaust every resource in order to nourish his patient. These patients often utterly refuse to take milk, which is usually the mainstay under such circumstances. Beef tea is a bubble that has long ago been pricked; even when prepared in the most scientific manner, its nutritive powers are very feeble; the various preparations of meat quickly tire; here is a gap which kumysgen stands ready to fill, for under these circumstances it is an ideal food, as it is at once of high nutritive value, of easy digestion and assimilation, and, by the presence of carbonic-acid gas, grateful to the most delicate and sensitive stomach.

To go from the general to the particular, I will describe a recent experience with kumysgen that put this production to the severest test.

During the summer of 1891 a young lady had an attack of acute gastro-enteritis, which, from neglect or imprudence in its management, resulted in an irritable condition of the stomach and intestine such as I have seldom seen in adults, although it is not uncommon in infants after this disease. Everything that this patient took into her stomach—even a few swallows of water—would be followed by colicky pains, and in most cases after an interval of from ten minutes to half an hour by a movement of the bowels. All kinds of food were tried, but all produced the same effect, even predigested milk proving no better than the other things taken, while plain milk as well as certain other articles of food invariably provoked nausea, besides setting up the intestinal irritation. Kumyss as ordinarily made behaved but little better than other preparations of milk.

In this distressing and difficult situation kumysgen has acted like a charm. The very first dose was perfectly well borne, not only by the stomach but also by the intestines, producing neither nausea, colic, nor defecation. After finding that it agreed well, I administered it a glassful at a time, repeated every three hours, giving nothing else for the first thirty-six hours, then adding milk to the kumysgen, then giving crackers with each glass, and so adding one thing after another to the bill of fare, getting the patient gradually back to a diet that included quite a variety of articles of plain food. I had previously proved the powerlessness of drugs to control the peristaltic action, even six grains of opium administered in the course of two hours failing to keep the bowels quiet, while large doses of bismuth, chalk mixture, catechu, sulphocarbolate of zinc, and other astringent and antiseptic drugs had been of no avail.

Another affection in which I have found kumysgen a great boon is the vomiting of pregnancy; it has been my experience that milk is not well borne in this situation, and although even milk and Seltzer or milk and Apollinaris water often fails to agree, I have found kumysgen highly satisfactory. No doubt its effervescence is a great help, but that this alone is not enough is shown by the frequent failure of milk mixed with an aerated water.

Again, for nursing women kumysgen is an admirable addition to the diet, for the purpose of maintaining the flow of milk with as little expense to the system of the mother as possible. It is particularly valuable for those women with whom cow's milk does not agree, for it is certain not to offend the digestive organs, and is fairly palatable. I am confident that here is a great field of usefulness for this preparation.

I have not yet had an opportunity to try kumysgen in typhoid fever, as that disease has been unusually rare in this part of the country during the last two years, but, from my experience with the article in the cases described, I look forward with confidence to using it successfully in typhoid. As I look back upon cases of this disease where milk has not been well borne, and as a consequence I have been at my wits' end to support the patient's strength, I think what a blessing kumysgen would have been, and I shall certainly grapple with typhoid with more confidence in the future, knowing that I have at hand a preparation so admirably suited to sustain the sufferer in his struggle with the malady.

A CASE OF LABOR
COMPLICATED BY A SUBMUCOUS FIBROID.

By R. O. HOLLISTER, M. D.,
PONCHATOULA, LA.

On March 29th, at 6 A. M., I was called to see Mrs. R., colored, aged about twenty-six. She had been in labor about twelve hours, under the attendance of a midwife. Her previous history showed she had borne four children, and had aborted once. She gave birth to her first child when about sixteen. She was small and delicate at that time. The labor was very difficult, lasting forty-eight hours, but took place spontaneously, and she made a good recovery. The second and third labors were not very difficult. After the birth of the third child she aborted, from which time she had been in poor health. The fourth child was born about three years ago. Labor was very difficult. There were a midwife and two "doctors" (non-graduates) present.

I have since seen one of the attendants; he said the treatment was time and ergot. He did not examine the abdomen after the birth of the child.

On my arrival I found the abdomen hard and tense and of peculiar shape. The uterus was apparently in a state of tetanic contraction. The abdomen was large and symmetrical—in fact, its symmetry was the most striking peculiarity about it. It resembled a slightly flattened cone, with the umbilicus near the center. Some abnormity was suspected, but I could get no light on that subject from the previous condition of the patient, and the uterus was so tense it was impossible to differentiate underlying structures.

By vaginal examination I found the os completely dilated, the membranes unruptured, the head high up, barely in reach of the examining finger. As I could discover no impediment to labor, I ruptured the membranes. Quite a quantity of water was discharged, and regular labor pains started up, though weak and short.

Leaving the case with the midwife, I went to breakfast. On my return about an hour later (about 9 A. M.) I found there had been no progress. The pains were very short and weak. I gave a small dose of ergot without any apparent effect. At eleven o'clock there had been no advancement. The pains had stopped; the tetanic condition of the uterus continued. I now applied the forceps and made traction several times without any effect.

At this juncture I sent for an old physician of our village, Dr. A. B. Robertson, to assist me. He examined the patient, thought I had not used sufficient force, and advised the forceps. I repeated the forceps operation with the same result.

Considerable exhaustion followed these operations; we therefore thought it advisable to wait a while, in the mean time giving her stimulants.

After consultation we concluded to anæsthetize the patient, make another attempt with the forceps, and, if unsuccessful, to perform version. The forceps failed as before, and with all the force I could employ I could not dislodge the head or change the position of the child. The patient had now been under chloroform for over an hour, and was in a state of collapse, which, I believe, was due to the chloroform, as the previous operations were not followed by any such symptoms. Stimulants were administered, jugs of hot water placed to the feet, etc. It took several hours for reaction to take place.

About 3 A. M. (March 30th) the patient was in good condition, the uterus was partly relaxed, so we concluded to carry out our plan of version.

Introducing my hand into the vagina, I easily pushed the head up. My hand came in contact with something from above. Turning my hand over, I hurriedly examined what I found to be a hard tumor, biconvex in shape; the upper border was free and presented a thin edge; it had apparently been torn loose from the uterus, as I could pass my fingers between the edge of the tumor and the wall of the uterus. By bimanual examination I judged it to be about four inches and a half thick in the center, and about eight inches in its transverse and perpendicular diameters, the center of the tumor being near the median line of the body. I did not examine the lower border.

With difficulty I found the child's feet lodged between the edge of the tumor and the wall of the uterus near the right anterior superior spine of the ilium.

I succeeded in bringing the feet down to the vulva, but could not draw them further with the bare hand; the epidermis slipped from the feet. Only by attaching a strong cord to the feet were we able to make further progress. After a long time and much labor the body of the child was extracted, but every inch of progress was made with the utmost difficulty, and several times it seemed impossible to make any progress.

After the body was extracted we found that the cervical vertebræ had separated; the soft parts were still intact; the head had not engaged in the pelvis. We attempted to extract the head by traction on the soft parts, but severed the body from the head.

I now made an unsuccessful attempt to apply the forceps to the head. The manipulation of introducing the first blade caused the head to slip up above the tumor, and it was impossible to push it down by external force.

The extraction of the body was followed by considerable hæmorrhage and collapse, from which the patient never rallied.

As I did not possess any craniotomy instruments, I now called to my aid Dr. S. L. Powlett, of the neighboring village of Springfield. He arrived about 9 A. M., but thought the condition of the patient did not permit of any operation. She gradually grew weaker and died at 12 M.

There was no autopsy.

Contrary to what the books say regarding submucous fibroids complicating pregnancy, this tumor was very hard and unyielding. The child was large, the patient small.

The American Gynæcological Society.—The annual meeting of this society in Brooklyn, last week, passed off agreeably and profitably. The next meeting will be held in Philadelphia, and Dr. Theophilus Parvin, of that city, is the president-elect. Dr. W. H. Parrish and Dr. W. H. Baker were chosen vice-presidents; Dr. H. C. Coe, secretary; Dr. M. D. Mann, treasurer; and Dr. A. P. Dudley, Dr. E. C. Dudley, Dr. B. B. Brown, and Dr. W. E. Ford, members of the council. The membership has now risen to ninety-one. Dr. Battey, of Georgia, and Dr. Cantani, of Naples, were elected to honorary fellowship.

The New York State Association of Railway Surgeons will hold its second annual meeting at the Academy of Medicine's building, in New York, on November 14th. Members of the profession are invited to attend.

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QUARANTINE REFLECTIONS.

The people of the United States have felt keenly the disgrace brought upon them by the riotous proceedings at Fire Island, but kindly words from abroad come to mitigate our chagrin. The *Lancet*, in an article that is remarkably appreciative of our situation, expresses its fear that like scenes might be enacted in Great Britain under the same circumstances. That journal, to be sure, shares in the general British opinion that cholera is best fought by other measures than quarantine, but it frankly admits that for the present quarantine may be necessary in America. It is certain that our people are not yet ready to abandon it, but there are various views as to its administration. The idea is gaining ground that our quarantine service ought to be one of the exclusive functions of the general government, and it seems to us that there is much to warrant this notion. Each individual State has, we suppose, an inalienable right to maintain a quarantine, but we also suppose that no State would care to be at the trouble and expense of doing so, provided it was assured that the general government was ready to carry on the work satisfactorily. It is nothing more than natural that citizens of other States should resent what seems to them an unnecessary detention in quarantine by the State of New York, even though that detention was exercised largely out of deference to the President of the United States. On the other hand, the people of the State of New York are beginning to ask themselves why they alone, or at least chiefly, should bear the burden of protecting the whole country against the importation of infectious diseases. It would be strange if the coming winter did not witness congressional consideration of the matter. If Congress takes action toward establishing an efficient national quarantine, we hope its management will still be vested in the Marine-Hospital Service.

THE EXCISION OF ANEURYSMS.

Among the many recent advances in general surgery there has been nothing, perhaps, more gratifying than the results attained in the extirpation of peripheral aneurysms. The accidents of gangrene and of secondary hæmorrhage, so frequent after Anel's, Antyllus's, and Hunter's operations, hardly ever occur when, under antiseptic precautions, the distal and proximal ends of the artery are tied and the whole sac is excised. Dr. E. Kübler, of Tübingen, in a recent article (Ueber die Exstirpation von Aneurysmen, *Beiträge zur klin. Chirurgie*) has collected the accounts of forty cases in which the aneurysmal sac was completely excised, twenty-eight times for arterial and twelve times for arterio-venous aneurysms. In thirty nine of the cases the operation was successful, notwithstanding the facts that in three of them the sac had previously ruptured and that in one instance the aneurysm had reached the size of a man's head.

In this country the desirability of adopting this method has been demonstrated during the present year by Dr. Halsted, of Baltimore (*Johns Hopkins Hospital Bulletin*, 1892, No. 4), who has excised successfully a large subclavio-axillary aneurysm from a man of fifty-two. The operation was one of peculiar difficulty, inasmuch as, together with the aneurysm, not only the greater part of the clavicle had to be removed, but also a piece of the deltoid muscle and a portion of the subclavian vein, these structures being so intimately adherent to the tumor as to make their separation by dissection unadvisable. The left subclavian artery was ligated in its first portion, an operation that had been done only once before (in 1846, by Dr. Kearny Rodgers, of New York), and then with a fatal result. The axillary artery was tied at the beginning of its second part, and the wound closed with buried sutures. The whole operation lasted three hours and a half. The wound healed satisfactorily.

The right subclavian artery has been tied twelve times or more in its first part, but in every case the patient died. In at least nine of these cases death resulted from secondary hæmorrhage from the distal side of the ligature. It has been suggested that if absorbable ligatures had been used, and if the coats of the artery had not been divided, the patients might have done better.

In the face of reports of this kind, the rational treatment of aneurysms of the peripheral vessels seems clear, and we can not doubt that the older methods will soon be, to some extent, replaced by excision. The length of time required to do the operations and the difficulties in the technique will hardly be regarded as strong objections in the well-equipped operating rooms of the present time.

MINOR PARAGRAPHS.

SYNCHRONOUS MOVEMENTS OF THE UPPER LID AND LOWER JAW.

A few cases of this kind have been reported, and the usually accepted explanation is that of Gowers, according to which the levator palpebræ in such cases receives fibers from the nuclei of the fifth or seventh pair of cranial nerves. Dr. O. Bull, of Christiania, records a case in the *Archives of Ophthalmology* for July which seems to show that this explanation is not sufficient. His patient's left upper lid had from birth hung down over the larger portion of the cornea and remained motionless during all movements of the eyeballs when both eyes were open. When he opened his mouth the lid was raised. It was also involuntarily raised by keeping the mouth shut and bending the head backward. Voluntarily he raised the lid fully when the other eye was covered, and he could check the involuntary movements by means of the orbicularis. In this case not only active contraction but passive extension of the digastric produced involuntary contractions of the levator, and the levator could be contracted voluntarily when the right eye was covered, independently of the muscle supplied by the fifth and seventh pairs. Bull suggests that, bearing in mind that the elevation of the lids is often made involuntarily by gaping, and still more by turning the head upward, it seems more plausible to explain the voluntary contractions of the levator in this case as associated or reflex movements. In cases where the raising of the lid is induced by muscular contractions only an assumption of an irradiation from the motor centers of the muscles in question to that of the levator may be a more plausible explanation.

GOOD DEEDS OF THE AMERICAN PHYSICIAN IN FOREIGN LANDS.

From a recent number of the *Independent* we take the following personal item reflecting credit on American physicians and students, some of whom are familiarly known in New York, in their distant fields of labor or study: "Americans abroad are contributing their share toward the relief of suffering and the cure and prevention of disease. In Persia the Presbyterian medical missionaries in Teheran have treated large numbers of patients, and their usefulness has been limited only by the means at their disposal. Not only the Board of Missions but the State Department have interested themselves in this work, and expressed their willingness to forward any sums that may be committed to them. In Berlin, Dr. Harris Graham, a member of the medical faculty of the Syrian Protestant College at Beirût, Syria, now in Germany on his vacation, has organized the American medical students into a corps of assistants and nurses to render the more efficient aid to the city authorities should their assistance be needed."

CHOLERA A POSSIBLE BLESSING IN DISGUISE.

Dr. Collingridge, of the port of London, is one of those men who can discern a "a silver lining" to even the dark cloud of epidemic cholera. He is reported in one of the London papers to have said, in substance: In fact, the cholera is *the best thing* that can happen to us. If we did not get a scare about once in three years, our sanitation would soon get neglected. Cholera passed our first great Public Health Act. It formed our port sanitary regulations and authority. These acts have saved more human lives than ever cholera destroyed since the world began. If the cholera experience of the port of New York in 1892 can do for us something intelligent, humane, or even human, in the way of sanitary legislation, these squalid immigrants, who have excited so much harsh comment, may prove to be angels in disguise to "a plenitude of generations yet to come."

THE TREATMENT OF CHOLERA AT HAMBURG.

The Hamburg correspondent of the *British Medical Journal* states that Dr. Rieder, assistant at the *Allgemeine Krankenhaus*, has found tannin enemata prove totally ineffective, also the case with the administration of camphor, ether, and salol by the mouth. Subcutaneous injections of salt solution did good in some cases, but the greatest benefit was derived from intravenous infusions of salt solution.

ENTERO-SEPTIC FEVERS.

In a paper published in the *Indian Medical Gazette* for August, Surgeon R. Ross considers that, as intestinal sepsis may exist, and septic absorption from the bowel is possible, such absorption may cause general septic fevers that may be mistaken for primary blood fevers because the seat of poisoning or infection is hidden away in the bowels. He believes that particular attention should be paid to abdominal complications occurring in cases of Indian fevers, in order to discover whether the fever or the bowel trouble is primary, and that, if the existence of entero-septic fevers becomes established, the term malarial fever will probably have to be limited in its application to, for example, cases in which the micro-organism of Laveran is found in the blood.

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending September 27, 1892:

DISEASES.	Week ending Sept. 20.		Week ending Sept. 27.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	0	0	0	0
Typhoid fever	72	13	54	23
Scarlet fever	44	10	58	9
Cerebro-spinal meningitis	1	1	0	0
Measles	31	6	24	2
Diphtheria	70	32	46	22
Small-pox	10	1	2	2
Cholera	6	5	0	1

The American Dermatological Association, at its annual meeting, held in New London, Conn., on September 13th, 14th, and 15th, elected the following officers: President, Dr. George H. Fox, of New York; vice-president, Dr. H. W. Stelwagon, of Philadelphia; secretary and treasurer, Dr. George T. Jackson, of New York; member at large of the Council, Dr. J. C. White, of Boston. The next meeting will be held in Milwaukee, on the first Tuesday of September, 1893.

The New York Hospital Training School for Nurses.—A reception is to be given this (Saturday) evening, in the administration building, No. 8 West Sixteenth Street, by the graduating class, which consists of Miss Caroline E. C. Woodrow, Miss Linda H. Thomas, Miss Jane Hodson, Miss Annie W. Goodrich, Miss Katherine Macdiarmid, Mrs. Stella M. Weller, Miss Sarah J. Mackenzie, Mrs. Mary E. Palmer, Miss Lillie H. Ellis, Miss Annie R. Young, and Miss Fannie E. Coggeshall.

The Babies' Hospital.—Dr. A. Blair Thaw, of New York, has given $10,000 to the hospital for the erection of a cottage at Seabright, N. J., to be used as a summer branch. The corner-stone was laid on September 24th, with appropriate ceremonies, including addresses by Dr. Andrew H. Smith, Dr. E. L. Keyes, Dr. R. B. Kimball, and others. The cottage will contain twenty-eight beds, and will be ready for use next season.

The Death of Dr. Jose Miguel Parraga occurred suddenly on September 9th, at the residence of his father-in-law, in Brooklyn. He was prominent in Cuban politics, and served as colonel during the Cuban insurrection. He was a member of the Academy of Medicine of Barcelona, and had practiced medicine in New York for about ten years. He was a thirty-second-degree mason, a member of the Mystic Shrine, Royal Arch, Past Master of the Star of Cuba Lodge, and one of the directors of the Cremation Company.

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from September 4 to September 24, 1892:*

Bushnell, George E., Captain and Assistant Surgeon, is granted leave of absence for one month, to take effect on the arrival of Henry A. Shaw, First Lieutenant and Assistant Surgeon, at Fort McKinney, Wyoming.

Heyl, Ashton B., First Lieutenant and Assistant Surgeon, is granted leave of absence for fifteen days.

Cleary, Peter J. A., Major and Surgeon, is hereby granted leave of absence for one month.

Borden, William C., Captain and Assistant Surgeon, is relieved from further temporary duty at Mount Vernon Barracks, Alabama, and will return to his proper station, Jackson Barracks, Louisiana.

By direction of the Acting Secretary of War, a board of medical officers—to consist of Alden, Charles H., Lieutenant-Colonel and Deputy Surgeon General; Sternberg, George M., Lieutenant-Colonel and Deputy Surgeon-General; Forwood, William H., Lieutenant-Colonel and Deputy Surgeon-General; and Carter, William F., Captain and Assistant Surgeon—is constituted to meet in New York city on October 3, 1892, for the examination of candidates for admission into the Medical Corps of the army, and for such other business as the Surgeon-General may desire to bring before it. Par. 9, S. O. 213, Headquarters of the Army, A. G. O., September 9, 1892.

Under telegraphic instructions of this date from the War Department, Cronkhite, Henry M., Major and Surgeon (Fort Trumbull, Conn.), will proceed without delay to Sandy Hook, N. J., and take station at that place for duty with the Government employees thereat. This detail will continue during the encampment of civilians landed at Sandy Hook from infected vessels at quarantine in New York Harbor. S. O. 123, Headquarters Department of the East, Governor's Island, New York city, September 9, 1892.

Dunlop, S. R., First Lieutenant and Assistant Surgeon, is granted leave of absence for one month, with permission to apply for an extension of one month. Par. 2, S. O. 99, Headquarters Department of Texas, San Antonio, Texas, September 20, 1892.

Lippitt, William F., Jr., First Lieutenant and Assistant Surgeon, will proceed from camp at Eagle Pass to Camp Pena Colorada, Texas, and report to the commanding officer for temporary duty. Par. 3, S. O. 99, Headquarters Department of Texas, San Antonio, Texas, September 20, 1892.

Stephenson, William, Captain and Assistant Surgeon, is relieved from duty at Fort Porter, N. Y., and ordered to Boise Barracks, Idaho, for duty at that station.

Swift, Eugene L., Captain and Assistant Surgeon, is promoted captian, to date from August 12, 1892.

Society Meetings for the Coming Week:

Monday, *October 3d:* New York Academy of Sciences (Section in Biology); German Medical Society of the City of New York; Morrisania Medical Society (private); Brooklyn Anatomical and Surgical Society (private); Utica Medical Library Association; Corning, N. Y., Academy of Medicine; Monmouth, N. J., County Medical Society (Freehold); St. Albans, Vt., Medical Association; Providence, R. I., Medical Association; Hartford, Conn., Medical Society; Chicago Medical Society.

Tuesday, *October 4th:* New York Obstetrical Society (private); New York Neurological Society; Elmira Academy of Medicine; Buffalo Medical and Surgical Association; Ogdensburgh Medical Association; Medical Societies of the Counties of Broome (annual), Columbia (annual—Hudson), Orange (semi-annual—Goshen), and Schoharie (semi-annual) N. Y.; Medical Association of Northern New York (annual—Malone); Hudson, N. J. (Jersey City), and Union, N. J. (quarterly), County Medical Societies; Chittenden, Vt., County Medical Society; Androscoggin, Me., County Medical Association (Lewiston); Baltimore Academy of Medicine.

Wednesday, *October 5th:* Medical Society of the County of Richmond (Stapleton), N. Y.; Society of the Alumni of Bellevue Hospital; Harlem Medical Association of the City of New York; Medical Microscopical Society of Brooklyn; Penobscot, Me., County Medical Society (Bangor); Philadelphia County Medical Society; Bridgeport, Conn., Medical Association.

Thursday, *October 6th:* New York Academy of Medicine; Brooklyn Surgical Society; Society of Physicians of the Village of Canandaigua; Washington, Vt., County Medical Society; Obstetrical Society of Philadelphia; United States Naval Medical Society (Washington).

Friday, *October 7th:* Practitioners' Society of New York (private); Baltimore Clinical Society.

Saturday, *October 8th:* Obstetrical Society of Boston (private); Worcester, Mass., North District Medical Society.

Proceedings of Societies.

AMERICAN ORTHOPÆDIC ASSOCIATION.

Sixth Annual Meeting, held in New York, September 20, 21, and 22, 1892.

The President, Dr. Benjamin Lee, of Philadelphia, in the Chair.

The President's Annual Address.—After referring to the fact that the association had returned to the city of its birth, the president paid a tribute to the memory of the late Dr. Buckminster Brown. The remainder of his address was devoted chiefly to a consideration of the inflammatory processes occurring in cartilage and the relation of the tubercle bacilli to articular inflammations. His conclusions were that the non-vascular tissues, such as cartilage, contained within themselves the elements necessary for the establishment of inflammatory processes, so that it was not necessary to presuppose the entrance of foreign elements; that it was often impossible to find a single tubercle bacillus in the products of marked articular inflammation, and when found, their numbers were entirely disproportionate to the extent of the pathological changes supposed to be due to their action; and that the self-limited character of chronic articular inflammation under appropriate conditions was the reverse of what was observed in tuberculosis elsewhere.

Osteitis Deformans, with a Report of Two Cases.—Dr. Henry Ling Taylor, of New York, read a paper with this title. Osteitis deformans, he said, was a chronic inflammatory disease of advanced life, affecting the long bones, the spine, the cranium, and the pelvis. Sir James Paget's study of this disease, published in 1876, had been the first to attract much attention, and to him we were indebted for most of our knowledge of it. It occurred with about equal frequency in both sexes, and at an average age of fifty-one years; the tibiæ, femora, clavicles, spine, and cranial bones were most frequently affected, and in the order named. It was rarely hereditary, and appeared to have no relation to gout, tuberculosis, syphilis, or rheumatism. It was inflammatory rather than degenerative, and probably depended upon some undetermined anomaly of nutrition. The bones underwent enlargement and softening, but did not become brittle, and the joint surfaces were not usually affected. The head was large and carried forward, and the bent knees and shuffling gait made an exceedingly striking clinical picture. The progress of the disease was extremely slow, and it had but little effect on the general health. Nothing was known to influence its course favorably. Of the patients whose cases Paget had been able to trace, five had died of carcinoma. Although the disease had been well studied in England, and was not very uncommon there, it had hitherto been considered quite rare in this country, and only three or four cases had been reported. The paper closed with a report of two cases which had come under the author's observation, one occurring in a gentleman of sixty, and the other in a lady who sought relief from a severe pain in one hip following an injury.

Dr. Roswell Park, of Buffalo, presented a specimen of this condition which he had taken from a dissecting-room subject, apparently about fifty or sixty years of age.

Dr. Royal Whitman, of New York, said that the specimen was a good one of arthritis deformans, and showed the hip joint, but not the femur involved in the disease process. The specimen, therefore, did not represent osteitis deformans.

Lateral Dislocation at the Knee Joint due to Tubercular Disease or to Paralysis, with Special Reference to Treatment.—Dr. Halsted Myers, of New York, read a paper with this title. He had found that the deformities at the knee in these two diseases differed only in degree, and therefore thought a similar origin most probable. The relaxation or destruction of the ligaments was of much more importance in permitting the subluxations and rotation than the destruction of bone. The contraction of the fasciæ and the reflex muscular spasm were the factors which produced the deformity. The location of the disease did not seem to influence the position of the limb. In paralysis, as well as in osteitis, flexion of the limb occurred before the other deformities. In that position the internal crucial ligament mainly prevented subluxation backward, and, as it was inserted to the inner side of the axis of rotation of the leg, opposed inward more than outward rotation. The spine of the tibia prevented rotation only when the ligaments held the bones firmly in apposition. The obstacles to reduction, its dangers, and the methods of treatment in vogue were spoken of, and the common reliance on crutches was strongly deprecated.

On account of its simplicity, the author recommended a method he had used successfully for reducing the troublesome outward dislocation of the tibia. By adhesive plasters, traction was exerted on the joint longitudinally in the direction of the deformity, and also diametrically opposite the subluxation, by a webbing band carried behind the head of the tibia and fastened over a spring thrown across a large window cut in the plaster-of-Paris splint in order to allow room for the leg bones to be drawn forward and inward. A perineal crutch invariably completed the apparatus.

Dr. **Reginald H. Sayre** had endeavored to press the bones into a straight position by means of bandages. The obstacle to reduction presented by the spine of the tibia had been well exemplified in a case in which, after having reduced the patella, he had expected to be able to overcome the deformity without exsecting the joint. Finding this impossible, he had cut down and discovered that the spine of the tibia had grown to at least an inch in length, and projected between the condyles, thus presenting a firm barrier to reposition.

Dr. A. M. **Phelps**, of New York, had excised many of these knee joints, and had found almost invariably that the posterior aspect of the external condyle had been cut away by pressure of the biceps tendon. The deformity was usually very difficult to reduce, even under ether, and hence he had usually excised the joint and obtained a good stiff limb. Undoubtedly the results with an ordinary traction splint were good in many cases, but most of the patients coming to him had had almost useless limbs, and had been much improved by excision.

Dr. C. C. **Foster**, of Cambridge, Mass., thought that some of the difficulty in overcoming the deformity was due to the common mistake of regarding the knee joint as a simple hinge joint.

Dr. H. **Hodgen**, of St. Louis, reported a peculiar case of adduction following fracture of the neck of the femur, and also two cases of peripheral neuritis.

The Classification of Hip Disease.—Dr. R. W. **Lovett**, of Boston, followed with a paper in which he endeavored to divide the subject on a clinical basis, with the object of facilitating the selection of the treatment best adapted to each particular case. While a pathological basis would be desirable, he thought our present meager knowledge in this direction made such an attempt impracticable. He distinguished four well-marked types of the disease, viz.: (*a*) The destructive form, (*b*) the painful form, (*c*) the painless form, and (*d*) the transient form. Under the first head he included those cases in which there were usually a tuberculous inheritance and poor vitality, in which there was much thickening of the circumarticular tissues even in the very early stages, and where abscesses and high temperature usually caused rapid wasting and death from exhaustion. Its subjects were peculiarly liable to tubercular meningitis, or, if they lived long enough, were prone to amyloid disease. The disease in some cases was probably an acute infectious osteomyelitis or a pyæmia which was not produced by the tubercle bacillus; but in other cases the tubercular formation was peculiarly rapid and extensive, and the process was comparable to the rapid form of pulmonary tuberculosis. The "painful form" was the common type of the disease, and in addition to the malpositions of the limb which were present, and which yielded readily to treatment, there were abscesses, and the disease ran a fairly rapid course. In the third form pain was not a prominent symptom, although "night-cries" might be present at times. It was a well-marked and distinct type, which was less common under six years of age than the preceding form, and ran a longer course. Muscular spasm was a very prominent symptom, the whole joint being rigidly fixed; in fact, there was not so much joint motion in any stage of the affection. Malformations occurred slowly and yielded very slowly to treatment; atrophy and shortening were more marked than in any other form of the disease, and the functional results were not so good. This variety of hip disease was probably a fibroid form of bone tuberculosis, the foci being surrounded by less irritation and hyperæmia. In the fourth, or "transient form," the early symptoms were not characteristic and, while in some of these cases there was a bone lesion, the symptoms closely simulated those of acute simple synovitis. It was probable that the focus of disease was in a part of the epiphysis remote from the joint.

Dr. **Phelps** heartily indorsed the views expressed in the paper. He believed that a post-mortem study of the ephemeral variety would show that there had been no inoculation into the area of disease, but that the normal process of repair had been interrupted by trauma.

Dr. H. A. **Wilson**, of Philadelphia, welcomed such a paper, as it did away with the injurious notion, still perpetuated in many of our text-books on surgery, that there was one form of hip-joint disease, divisible, it was true, into three stages, but practically demanding one plan of treatment. The author had given a very accurate description of the disease, both pathologically and clinically.

Dr. **Park** had hoped the pathology would receive more extensive consideration. Looking at the subject from this point of view, he distinguished two forms—viz., the synovial and the osseous, and the same processes might obtain in either form. These processes might be described under four heads: (1) a very acute tubercular form, corresponding to miliary tuberculosis of the lung; (2) a slow tubercular process, corresponding to ordinary consumption; (3) an acute pyogenic infection; and (4) a slow or mixed form. Regarding the first form, he was thoroughly convinced that there might be an acute tuberculous osteitis which would destroy the joint or a bone as quickly as it would kill an individual. Where there was an infection with staphylococci or streptococci the process was even more rapidly destructive than in the acute tubercular form. Various pathological researches had shown that tubercle bacilli might by themselves act as pyogenic organisms, although in most instances suppuration of the tubercular foci was due to a secondary pyogenic infection. The difference between the author's destructive and the painless forms was mainly one of pyogenic infection. Although the fibroid form of tuberculosis was considered to justify a more favorable prognosis, the speaker doubted whether from a clinical standpoint this was true as regarded joint disease, for in the hands of a competent surgeon it was better to have rapid abscess formation and early resection than to have lingering fibroid changes from which recovery was never complete.

Dr. **Taylor** had also been greatly interested in the paper, for it augured a better and more exact knowledge of the pathology of joint affections in general. While admitting the importance of recognizing different types of the disease, he thought the general indications for treatment would only require to be modified in their details in order to adapt them to each special type. In our desire to have a more scientific classification, it would be unfortunate were we to forget that as the central symptom of all these different types of the disease was muscular spasm about the joint, so the central point of treatment was efficient and continuous counter-extension. Again, he had understood the author to say that he found it difficult sometimes in practice to draw these distinctions, and hence one might be led into serious error by mistaking a grave case for one of a milder form, and shaping the treatment accordingly.

Dr. J. E. MOORE, of Minneapolis, and Dr. G. W. RYAN, of Cincinnati, also expressed their pleasure at having such a classification, if only to assist in teaching. Dr. Ryan, however, did not agree with the author that we were not yet ready for a pathological classification. In a general way, he had been accustomed to look upon a case with acute symptoms as indicating tubercular disease of the soft parts, and one which the author would describe as belonging to the painless form as a case in which the disease was in the bone, and had not yet invaded the soft structures.

Dr. LOVETT replied that the classification presented was only a preliminary one, and he sincerely hoped it would be the means, with the co-operation of the other members of the association, of advancing our pathological knowledge to such a point that we should be justified in making it a basis for another and more accurate classification.

Plaster of Paris in Orthopædics.—Dr. A. J. STEELE, of St. Louis, read a paper on this subject. He exhibited an instrument which a friend of his had devised for cutting out a strip from a plaster splint or corset. It resembled two Hey's saws set parallel to each other, about three eighths of an inch apart. Besides using plaster-of-Paris casts as an accurate record of cases of deformity, he employed them largely as molds over which to fashion leather corsets. Sole-leather which contained no oil or dressing was selected, and, after being well soaked in water to render it pliable, it was wrapped around the plaster mold and pressed into the inequalities of the surface by a stout cord which was applied with great force. The most important point was to bake these corsets at a temperature not exceeding 200° F. until they were thoroughly dry, when they would be found to be very hard. A higher temperature would make the leather very brittle.

Dr. AP MORGAN VANCE, of Louisville, had found that immersion in boiling water had the same effect as the baking. He often molded the leather directly upon the patient.

Dr. L. E. WEIGEL, of Rochester, preferred hand-made plaster bandages to all others, and had succeeded in diminishing the trouble of making them by having the bandage come through the bottom of a box and pass out through a slot. As it was wound up by hand, the plaster was rubbed into the bandage by the edge of the box. Where a light cast was desired, one end of the mold was closed, and the mold revolved, thus making a hollow cast which dried quickly.

Dr. B. E. MCKENZIE preferred stout raw-hide to leather, as it was more pliable when wet, and, when once thoroughly dried, did not yield to the warmth and moisture of the patient's body. It should be placed near a range or register to dry. This drying process sometimes occupied two weeks, but, if it was thoroughly done, there would be no trouble from curling. He also spoke of the very beautiful and accurate casts which were obtained by Dr. Peters, of Toronto, by using paraffin instead of plaster of Paris.

Dr. PHELPS had yet to see a case of Pott's disease which had been properly supported by either raw-hide or leather corsets. Plaster of Paris was the best possible material, and should be applied so that it could not be taken off by the parents or friends. For lateral curvature he knew of nothing better than the wood corset.

Dr. S. KETCH, of New York, thought that the very fact that a steel brace could be removed at pleasure was a decided point in its favor, for one of the dangers of plaster-of-Paris dressings was the undue pressure and excoriations which were likely to occur unless the dressing was carefully watched and removed for inspection at short intervals.

Observations on the Ultimate Deformities of Pott's Disease; their Modification and Prevention, was the title of a paper by Dr. WHITMAN, who exhibited a patient to illustrate the apparatus which he employed. The treatment described was especially applicable to disease between the fifth and tenth dorsal vertebræ. The object of treatment should be to straighten the entire spine, above and below the seat of disease, and so limit the kyphosis to this point. He believed that an important point in treatment was restraining the motion of the arms. Backward traction on the shoulders secured an habitual military attitude and tended to fix the spine. We might hope by constant supervision of a child during the entire period of growth to prevent an increase of the deformity.

Dr. R. H. SAYRE said he had on a previous occasion expressed himself in favor of making backward traction on the shoulders. He had seen this patient before the application of the chin-piece, and he could say now that the child's position was very much straighter than it was before.

Dr. KETCH had also seen the child before, and, in view of the fact that we were generally unable to prevent an increase of the deformity, Dr. Whitman was to be congratulated at the apparent improvement which had already taken place. If we could limit the respiratory movements, he thought we could prevent further deformity.

Dr. PHELPS said that, while it was true that if a Taylor or other similar brace was used, the deformity would increase, he was positive that when plaster was used, and a jury-mast applied with the head well thrown back, this increase would not be observed.

Dr. WILSON was surprised that Dr. Whitman had been able to hold the deformity in check for so long a time, yet he felt almost certain that the deformity would increase sooner or later. The superincumbent weight of the head was the chief factor in producing the deformity. In the apparatus which he employed there was a head support, and there were pads in front of the shoulders to hold them back.

Dr. A. J. GILLETTE, of St. Paul, had a case under treatment in which he had been able to improve the deformity.

Dr. STEELE favored recumbency, and, if this was secured by means of his "stretcher-splint," not only would the superincumbent weight be removed, but the spine would be immobilized without detriment to the general health.

Dr. MCKENZIE used a raw-hide jacket and hoops over the shoulders instead of a jury-mast—"the croquet-hoop apparatus."

Dr. E. H. BRADFORD, of Boston, thought the time had passed when we could say that this or that particular brace was the only one that would cure a disease. We all recognized the great proneness of the deformity to increase when the disease was in this region, and we also knew that this tendency could be counteracted by the exercise of great care. It was careful and attentive treatment rather than plaster of Paris or steel braces which was the secret of success here as elsewhere.

Dr. J. D. Griffith, of Kansas City, said that his own little girl, now nine years old, had Pott's disease, which he had treated by a portable apparatus up to the last twelve months. At present he had two other cases which he was treating by recumbency, and he was bound to say that in these two cases there was very much less deformity than in his own child.

Dr. Whitman expressed surprise at Dr. Wilson's asserting for a certain brace that it completely removed the superincumbent weight, for he had never seen such a splint, and was of the opinion that the only way this could be accomplished was by recumbency. All acute cases in young children should be treated on the back, but a case like the one presented would require treatment for many years, and, of course, here recumbency was out of the question.

Lateral Curvature of the Spine.—Dr. Bradford read a paper on this subject, and described a new method of treatment which he had been trying during the past six months in severe cases of lateral curvature with marked rotation and continually increasing curves, and also in cases where the curves were nearly fixed. The method consisted in suspending the patient in the ordinary way and applying plaster bandages, then, while the plaster was hardening, in making very strong forward and backward pressure on the ribs by means of screws and plates. This was of course very harsh treatment, and, before trying it on others, he had submitted himself to it, and had been surprised to find that the discomfort was not so great as one would suppose. He also showed a photograph of an apparatus intended to be used in cases where the spine was quite flexible, and where it was not considered advisable to restrain the muscles by a plaster jacket.

Dr. De Forest Willard, of Philadelphia, thought the pain would be so great as to prevent a continuance of the treatment. He recalled a very severe case in which he had attempted forcible reduction, and, while it did not cause much discomfort during that day, it caused so much suffering at night that he was compelled to remove it before morning.

Dr. Ryan had also tried to effect reduction by direct pressure, and had been compelled to abandon the treatment.

Dr. McKenzie was at present experimenting with a very similar contrivance, although he did not expect much from mechanical appliances in the treatment of lateral curvature.

Dr. Ketch asked if the pressure interfered with respiration.

Dr. Bradford said that the pressure had been made from behind, directly forward on the projecting ribs, and he had not observed any embarrassment of respiration.

Papers were also presented by Dr. B. E. McKenzie, of Toronto, on A Case of Spontaneous Dislocation of the Hip Joint, and by Dr. John Ridlon, of Chicago, on The Orthopædic Treatment of Infantile Spinal Paralysis.

(*To be continued.*)

MEDICAL SOCIETY OF VIRGINIA.

Twenty-third Annual Meeting, held at Alleghany Springs, September 13, 14, and 15, 1892.

Officers for the Ensuing Year were elected as follows: President, Dr. Herbert M. Nash, of Norfolk; vice-presidents, Dr. W. P. McGuire, of Winchester, Dr. T. J. Taylor, of Walthall's Store, and Dr. A. Z. Koiner, of Roanoke; recording secretary, Dr. Landon B. Edwards, of Richmond; corresponding secretary, Dr. J. T. Winn, of Richmond; treasurer, Dr. R. T. Styll, of Hollins; chairman of the executive committee, Dr. Hunter McGuire, of Richmond; chairman of the publishing committee, Dr. Hugh M. Taylor, of Richmond; chairman of the committee on applications for fellowship, Dr. W. D. Turner, of Fergusson's Wharf; chairman of the necrological committee, Dr. J. S. Apperson, of Marion.

During the session Dr. Joseph Price, of Philadelphia, Dr. H. Grey Latham, of Lynchburg, and Dr. Landon B. Edwards, of Richmond, were elected honorary fellows of the society.

Dr. J. T. Graham, of Wytheville, was appointed to deliver the annual address to the public and profession for the session of 1893. The subject for general discussion for that meeting is to be Chronic Nephritis, with Dr. R. M. Slaughter, of Theological Seminary, as leader. The place chosen for the next meeting is Charlottesville, at such time during October, 1893, as the local members may select. The medical examining board for the quadrennial term to begin January 1, 1893, will be composed of about the same men who now serve on it.

The Annual Address to the Public and Profession was delivered by Dr. Jacob Michaux, of Richmond, on the subject of The Medical Examining Board. The only means of reforming medical education, he believed, was by such a board. He pointed out the absolute necessity for: 1. Preliminary academic examinations prior to admission into medical schools. 2. That the teaching and examining departments should be separated. He also suggested that the several State examining boards should be made boards of health. He cited the much higher requirements of European countries, both as to medical and as to academic branches.

Tetanus was the subject of the prize essay submitted in competition for Dr. Hunter McGuire's prize of a hundred dollars, signed, *non sine semine.* Dr. Charles M. Blackford, of Lynchburg, was found to be the author on opening the envelope. He defined tetanus as an acute infectious disease. The results of the investigations made he summed up as follows: 1. Tetanus consists essentially of a tonic spasm of certain muscles which have been thrown into a state of physiological tetanus. 2. This is caused by abnormal irritability of the reflex centers of the medulla and cord. 3. This hyperæsthesia is the result of the physiological action of certain ptomaines, or alkaloids of decomposition, formed in the wound and absorbed therefrom. 4. The ptomaines are the result of the growth of a specific bacterium called the bacillus of tetanus or the bacillus of Nicolaier, and only by it. Therefore, 5. Tetanus is a toxic disease, caused by the infection of a wound by this specific bacterium or its products.

As to treatment, an ounce of prevention was preferable to a pound of cure. Scrupulous care should be taken to explore the wound and clease it of all foreign substances. A germicide should be applied to the wound when the recesses had been opened. Because of their undoubted power to destroy the ptomaines, perhaps through the iodine they contained, iodoform and aristol should be freely used. To render the wound surgically clean, corrosive sublimate and carbolic acid were our chief aids and should be used first; after disinfection, iodoform and aristol could be used. If tetanus occurred after thorough asepsis and antisepsis, then the wound had been contaminated by some error of omission or commission on the part of the surgeon. The prevalent idea that the hands and feet were peculiarly liable to tetanus, after being wounded, was due to the fact that it was more difficult to clean them and they were more liable to become dirty. If tetanus had begun, the first indication was to stop the formation of the ptomaines. To do this, the wound should be even opened and thoroughly disinfected, sometimes with the actual cautery. The writer preferred solutions of corrosive sublimate (1 to 250 or 1 to 500), as they acted just as well and avoided the shock caused by the curette or cautery. The room should be absolutely quiet in order to avoid peripheral irritation as far as possible. The bed-clothes must be light and, if practicable, should be supported by a frame so as not to touch the patient. Large doses of potassium bromide or chloral were to be given by the mouth or rectum, either together or separately. Chloroform and ether were of doubtful value, as to produce an effect they must be given to full anæsthesia, and, as the patient had difficulty in breathing any way, it was unwise to put a further obstacle in his way. Amyl nitrite had not been used personally by the writer. Good results had been reported from the use of curara. Large doses of opium were frequently serviceable, and digitalis, ammonia, or alcohol might be needed as a stimulant. Our chief reliance among drugs was physostigma, administered in the dose of a third of a grain of the extract subcutaneously, or a grain by the mouth, to begin with, to be repeated in two hours. It was more elegant to use salicylate of physostigmine subcutaneously, and it had the advantage of avoiding the pain and spasm caused by attempting to swallow. "Tetanus antitoxine," to be used hypodermically, had been discovered by Tizzoni and Cantani, and had been used successfully to cause immunity from the disease, even in highly susceptible animals. Even the blood serum of protected animals was antitoxic and produced immunity against and cure of the disease. Tetanus antitoxine might be had in solid form by adding alcohol to the serum of an inoculated animal and evaporating *in vacuo.* Schwartz had related the case of a boy treated by him, aged fifteen years, and said that Gagliardi, of Molinella, had treated a severe case by the hypodermic injection of a gramme, with the disappearance of all symptoms and complete recovery.

The secretary stated that Dr. Hunter McGuire, now visiting in Europe, had authorized him to announce as the subject for the Hunter McGuire Prize for the session of 1893, Obstruction of the Function of Micturition and the Results. The offer is open to members of the medical societies of Virginia, West Virginia, and North Carolina.

Dr. Joseph Price, of Philadelphia, authorized the recording secretary to announce for him that he would offer a hundred dollars as a prize for the best history of surgery and surgeons in Virginia presented by any fellow of the Medical Society of Virginia during the session of 1893, the conditions of award to be the same as those fixed for the award of the McGuire prize. The offers were accepted, and in due time the details governing the award will be published.

Vertigo.—The discussion of this subject was opened by Dr. E. T. Brady, of Marion. After making remarks upon the nature of vertigo in general, he stated that the causes were gastric, cardiac, cerebral, laryngeal, ocular, aural, toxic, epileptic, and essential, and stated briefly the characteristics of each. He believed that laryngeal vertigo was another form of epilepsy, and that progress in diagnosis would show that the toxic form included the larger number of cases. He believed that a far greater number of cases were attributable to nervous causes than to any disturbance of the intracranial circulation. There were three causes that might affect the nerves—namely, (*a*) the direct mechanical or chemical effect of poisons or imperfectly oxidized materials accumulating in the blood, (*b*) pressure upon centers governing the equilibrium, and (*c*) reflex, from acute localized inflammations, the equilibrial centers being disturbed by unusual impressions caused by and deflected from associated nerve fibers. Speaking of the gastric form, he called attention to the fact that it was not accompanied with violent indigestion, but that digestion was delayed or prolonged. This he regarded as the most common form. He called attention, in mentioning aural vertigo, to the fact that deaf-mutes were free from vertigo, and seemed to infer from this that the sense of hearing entered largely into the causation of vertigo. He omitted epileptic vertigo as being a form of epilepsy and deserving a more detailed treatment than could be accorded it in such a limited time. He said little in regard to treatment, but recommended cocaine locally in Ménière's disease, and suggested the advisability of producing deafness in intractable cases. He closed with remarks regarding general treatment, especially recommending pepsin, pancreatin, and lactic acid.

Dr. W. C. Dabney, of the University of Virginia, after remarking that vertigo was often due to toxic principles in the blood, recommended small doses of morphine, such as a tenth of a grain, for temporary relief in some forms of renal vertigo especially. Of course the most important point in all these cases was to remove the cause.

Dr. Bedford Brown, of Alexandria, said that vertigo was not a disease, but rather the manifestation of disease, usually functional, sometimes organic, and then again purely sympathetic in origin. It might arise from morbid conditions of the circulation or nervous system of the most opposite character. It often preceded death from post-partum or other uterine hæmorrhage. Some of the most violent types of vertigo were associated with the hysterical diathesis. Even in the dead hours of night such patients would awake with intense dizziness and sensations of sinking. Alcohol and tobacco were fruitful causes of vertigo, through their poisonous action on the brain and sympathetic systems. Indigestion of a transient character and protracted dyspepsia, such as "biliousness," caused "sympathetic vertigo." Then there was an explosive form of vertigo due to blood poisoning, as was seen during the progress of uræmia—coming and going in rapid succession. Hence, as to treatment, it was as diverse as the causes were varied. Antiphlogistics were demanded when vertigo was associated with plethora or congestive tendencies, such as cathartics and simple diet. In cases of high arterial tension due to hypertrophy of the left ventricle, digitalis and nitroglycerin were applicable. Iron and strychnine almost invariably relieved cases associated with anæmia. Full doses of valerianate of ammonium and bromide of sodium gave prompt results in hysterical and nervous forms of vertigo. For the vertigo of Bright's disease, nitroglycerin, a fiftieth of a grain three times daily, with saline aperients and diuretics, was valuable. Among the very best eliminant diuretics in these cases was diuretin, or salicylate of theobromine, in doses of from two to five grains every two or three hours, in capsular form. In the "bilious vertigo"—vertigo sympathetic with indigestion—we should correct acid fermentation and putrefactive action by alkalies, and then give hydrochloric acid, pepsin, strychnine, and bismuth subnitrate. In nervous, feeble constitutions, pills of valerianate of iron, quinine, and zinc exerted admirable effects. In marked tendencies to vertigo we should never fail to direct attention to the kidneys and test the urine for albumin, casts, and sugar. The speaker had never seen a case of chronic nephritis or diabetes mellitus that was not accompanied with more or less vertigo. In cases of vertigo due to saccharæmia acting on the nervous centers, a grain of codeine at night, with nitroglycerin and tincture of chloride of iron during the day and proper antidiabetic diet, was a good treatment.

Dr. Joseph A. White, of Richmond, remarked that four forms of vertigo—aural, ophthalmic, nasal, and laryngeal—came more or less frequently under his observation, limiting his practice as he did to diseases of the eyes, ears, nose, and throat. Aural vertigo accompanied such troubles of the ear as hyperæmia, anæmia, and apoplectoid troubles of the labyrinth (Ménière's disease), which were usually associated with corresponding alterations in the brain. Impactions of wax or other compression of the labyrinthian fluid, pathological alterations of the vestibule and ampullary nerves, etc., were causes. Ophthalmic vertigo was due to lack of co-ordination of the ocular muscles.

Nasal vertigo had been reported by a number of authors who asserted that the intranasal changes by way of Meckel's ganglion caused localized vaso-motor alterations and anæmia in the brain. But the speaker thought that all such cases belonged to the category of aural vertigo. Charcot had first used the name laryngeal vertigo to designate laryngeal spasm followed immediately by vertigo and loss of consciousness. A patient in apparent health was suddenly seized with mild tickling or irritation of the larynx, which produced a slight cough. Obscurity of vision and dizziness immediately followed and he fell in a state of complete unconsciousness of only a few seconds' duration. Ordinarily there were no premonitory symptoms and no assignable cause. In mild cases unconsciousness might not occur. The resemblance to epilepsy was such that some observers styled it "laryngeal epilepsy." The laryngeal cavity rarely presented evidence of lesion, although some cases had seemed to depend upon a catarrhal laryngitis.

Dr. Joseph Price, of Philadelphia, remarked upon some cases of vertigo following prolonged hæmorrhage, as in tubal pregnancy, neglected polypi, etc. The great trouble about the successful treatment of vertigo was to discover its precise cause. A diagnosis made, the patient was half cured. He wished the opium habit was confined to those who took the drug. But there was, far more unhappily, an opium habit of the profession—of those who prescribed the drug—which was far more dangerous to the health and lives of trusting patients. Many of the profession were entirely too callous and indiscriminate in prescribing this potent agent; and he wished to impress upon those who followed the advice just now given to use morphine in renal vertigo to be careful not to adopt it too quickly or continue the plan too long. The treatment recommended by Dr. Brown was the acme of perfection.

Dr. Brady stated that he had, of course, seen errors in the use of opium in vertigo; but this drug was not infrequently useful to obtund the nervous sensibility, as in certain cases of renal vertigo, such as Dr. Dabney had referred to. But, ordinarily, he would not use morphine in renal troubles.

The Mysteries of Medicine.—Dr. Charles W. Gleaves, of Wytheville, read a paper with this title, recounting many of the ludicrous and absurd practices and teachings of physicians centuries ago and of the quack and charlatan of this generation, and closed with pictures drawn by the Hon. Thomas F. Bayard, the late Mr. Whittier, and others, of the eminently true physician of to-day.

Puerperal Fever.—Dr. R. S. Martin, of Stuart, read a paper on this subject. He said it was the accepted idea that every case of puerperal fever was due to infection which entered the system *per vaginam.* He cited two cases: first, that of a lady who on the fifth day of labor had a severe chill, a temperature of 104° F., a pulse of 160, a respiration of 40, suppressed lochia, and vomiting. Intra-uterine irrigation with a 1-to-3,000 bichloride-of-mercury solution by means of a fountain syringe and Chamberlain's intra-uterine tube was given. In three or four hours her temperature was normal and her pulse 96. A slight rise took place the next day and the irrigation was repeated, also for the next few days, as a matter of precaution, and iodoform was applied around the cervix. This patient made a good recovery and had no rise of temperature after the second day. The second case was one of abortion at the fourth month. On the second day the patient had a bad chill, fever, and offensive lochia. An examination was made with Erich's speculum, and part of the placenta found in the uterus. This was removed with a curette, intra-uterine irrigation with bichloride-of-mercury solution (1 to 4,000) was used, and iodoform was applied to the interior of the uterus. A dose of castor-oil was given, and a vaginal douche of hot water ordered daily. This patient also made a rapid recovery. During the first years of the author's practice, using but little local treatment and relying on internal medication, he had lost most of his patients. Since using the improved treatment he had cured them all.

He noted Dr. Pryor's treatment, which was, if the case was seen early, to wash out the uterus with quarts of a solution of bichloride of mercury (1 to 4,000) at a temperature of 110° F.; afterward to wash away the mercury solution with boiled water to which had been added a teaspoonful of salt; after this, if the temperature did not fall in two hours, to employ continuous irrigation with a warm saturated solution of boric acid or boiled salt water—which should be kept up several hours after the temperature fell—with an occasional douche of the bichloride (1 to 5,000 or 10,000); and then to introduce a twenty-grain pencil of iodoform into the uterus, and let the patient alone. If this failed to reduce the temperature, instead of laparotomy, which should be performed only in rare and severe cases, he preferred curetting the uterus and packing it with iodoform gauze, plain mull, or lamp-wicking, the two latter to be boiled before being used. The uterus should be washed out, both before and after the curetting, with a 1-to-5,000 solution of bichloride of mercury.

Dr. Joseph Price, of Philadelphia, remarked that puerperal fever might be due to any one of many causes. Even before gestation a small hidden fibroid might be waiting in the uterus, as it were, for pregnancy to occur in order that the fœtal kicks of quickening might bruise it and start up inflammatory action. Undoubtedly many such a patient was buried without a correct diagnosis having been made during life. In practicing the Credé method of expression of the placenta, one sometimes for the first time detected a tumor in or about the uterus. He mentioned one thus discovered, on which he had operated several years afterward, while the patient had pyæmia, but recovered. However, although puerperal fever was not always due to infection from without, absolute cleanliness could not be too much insisted upon in every maternity. Childbed fever was common enough over the whole world. An epidemic of it was now prevailing in Los Angeles, and in a New Jersey town there had been eighteen deaths from it during the past year. Either there was some other cause for the disease in these localities, or there was something wrong about the nurses, the doctors, or the surroundings. Dr. Price then described his method of securing the perfection of cleanliness as far as practicable in his surgical and obstetric work, and incidentally described the outdoor obstetric service of which he had charge in Philadelphia. He was of the opinion that no woman ought ever to die of childbed fever contracted by so-called "infection from without." The practice of the gospel of cleanliness would prevent infection. When childbed fever did occur, nothing short of abdominal section would save some of the patients. In the last six or seven months he had seen eighteen cases. He had operated in six cases and lost three patients. Under the old treatment probably all six would have died. In private practice, out of eleven patients, only one had got well under the non-operative treatment. Purgation was better than nothing; but, if a tumor, a pyosalpinx, an abscess, or the like had burst into the abdomen, nothing short of laparotomy would save the patient—dilatation, curetting, etc., would not do so. Undoubtedly there was such a disease as endometritis, but none of these cases were fit for the curette. It was best to look upon all women just after labor as wounded women. All injuries in childbed were to be looked after and treated as if they had undergone ovariotomy. Physicians had become too dependent upon the idea that labor was a physiological process, not needing treatment. The preparatory treatment of the patient consisted in vaginal douching with mercuric-bichloride solutions, before, during, and after labor. There should be military precision in all things about the bed, the patient, the nurse, the physician, etc., exemplifying "the gospel of cleanliness." The placenta was to be expressed, not pulled out. The ante-partum vaginal douche prevented ophthalmia neonatorum in most cases.

(To be continued.)

Miscellany.

A Sensible Plan for Selecting a Health Officer.—The Board of Health of Savannah, Ga., is to be commended for the plan it recently adopted to secure a quarantine officer at that port. Notice was given that examinations of applicants for the position would be held in New York, Philadelphia, Savannah, and New Orleans, the successful candidate to receive $2,000 per annum salary and to hold the office for three years. The examination required the name, age, residence, college, the date of graduation, a statement of the hospital experience if any, whether the candidate was subject to seasickness, and his experience in microscopy and bacteriology. The professional examination was: 1. Name the eruptive fevers, give the symptoms, differentiate one from another, and state the most probable mistakes, giving the outline of treatment in each case. 2. Describe malarial fever in its different forms, Chagres fever, and dengue, giving the symptoms, duration, period of incubation, and treatment, as well as their diagnosis from yellow fever. 3. Describe cholera morbus, dysentery, and acute diarrhœa, and give the symptoms, course, duration, treatment, and diagnosis from Asiatic cholera. 4. Give the ætiology, period of incubation, and treatment of Asiatic cholera. 5. State what is known regarding the comma bacillus and the germicides applicable to its destruction. 6. Diagnosticate a case of leprosy. 7. In what months do vessels incur most risk from yellow fever in Rio Janeiro, Santos, and neighboring ports? 8. What months offer the greatest danger in Havana and other ports in the Gulf and in the Caribbean Sea? 9. Give your ideas in full as to the proper inspection of a passenger steamship. Give, also, an idea of the proper inspection of a sailing vessel in ballast from Rio to Savannah. 10. Which is farther penetrated by sulphur dioxide, wet or dry wood? Would you wash the hold of a vessel prior or subsequent to fumigation. 11. Is SO_2 lighter or heavier than air, and where therefore would you introduce the gas, if cool, from a lead of pipe or where place pots if the gas was produced by burning sulphur in pots? 12. What articles should be exempt from sulphur fumigation, and how should they be disinfected? 13. What should be exempted from a $HgCl_2$ solution, and how should it be disinfected? 14. What strength of $HgCl_2$ solution is sufficient for disinfection of textiles; what strength for the holds of vessels? 15. How can you prevent damage to brasses and other bright metal from sulphur fumes? 16. What length of time should the fumes of SO_2 be retained in vessels to be effective in destroying disease germs? 17. Name the principal Atlantic ports of South America and the West Indies; the Gulf ports outside of the United States; the Black Sea ports; the Mediterranean ports.

We think the examination a fair one for determining the qualifications of the candidates, and we should be glad to learn that this plan had a chance of being generally adopted by health boards in selecting the medical staff.

The Relations of Pelvic Disease to Psychical Disturbances in Woman.—At the fifth annual meeting of the American Association of Obstetricians and Gynæcologists, held at St. Louis, Dr. George H. Rohé, of Catonsville, Md., read a paper on this subject. The author pointed out the frequency with which bodily conditions influenced mental states. Thus, a torpid condition of the intestines, Bright's disease, putrefactive processes in the intestinal canal, etc., might give rise to melancholia and other disorders of the mental functions. It was not irrational to suppose likewise that diseases of the female sexual apparatus would have a not inconsiderable influence in the production or perpetuation of mental disorders. As a contribution to our knowledge of the subject the following report was submitted: In a hospital containing 200 insane women, 35 were subjected to vaginal examination and 26 found with evidences of pelvic diseases. In 18 of these the uterine appendages were removed with the following results: Sixteen recovered from the operation and 2 died. Of the 16 recovered, 3 had been discharged from the hospital completely restored, both physically and mentally. In 10 considerable improvement had followed the operation in both physical and mental conditions, and in 3 the operation was of too recent a date to allow any definite expression of opinion. The mental disorder present in the 18 cases was melancholia in 6 cases, simple mania in 1, puerperal mania in 4, hysterical mania in 1, periodic mania in 2, hystero-epilepsy with mania in 1, and epilepsy with mania in 3. The author, basing his opinion upon his experience, concluded as follows: "The facts recorded demonstrate: first, that there is a fruitful field for gynæcological work among insane women; second, that this work is as practicable and can be pursued with as much success in an insane hospital as elsewhere; and, third, that the results obtained not only encourage us to continue in the work, but require us, in the name of science and humanity, to give to an insane woman the same chance of relief from disease of the ovaries and uterus that a sane woman has."

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

THE NEW YORK MEDICAL JOURNAL, OCTOBER 8, 1892.

Original Communications.

CONTRIBUTION TO THE SUBJECT OF INTRACRANIAL LESIONS WITH DEFECTS IN THE VISUAL FIELDS.

*FIVE CASES, WITH AUTOPSIES.**

BY CHARLES STEDMAN BULL, M. D.,
PROFESSOR OF OPHTHALMOLOGY IN THE UNIVERSITY OF THE CITY OF NEW YORK.

CASE I. *Pachymeningitis of the Convexity of the Brain, with Extensive Endarteritis at the Base.*—A lady, aged fifty, presented herself in May, 1886, with the following history: Four years before, she had suffered from a very severe mental shock, brought on by the sudden death by an accident of two members of her immediate family. Previous to this she had always enjoyed a fair state of health, though she had never been strong. The sudden shock caused a series of convulsions, which ended in a profound condition of neurasthenia, lasting for more than five months before she began to improve. The nervous prostration was accompanied by a profuse menstrual flow, coming on every three weeks and lasting for twelve days. Somewhat less than a year later the vision of the left eye became affected, the first symptom being night-blindness. The amblyopia of the left eye progressed very rapidly, so that in less than three months she was unable to read the largest type with any glasses. With every recurrence of the uterine hæmorrhage the vision in the left eye became suddenly much worse. About a year ago the right eye became affected in the same way, but not with the same rapidity, the first symptom being again night-blindness. She then began to suffer from headaches of a peculiar type, beginning at the vertex with a feeling as if a sharp instrument had been driven through the skull, and had then been turned round in the brain, and she would shriek with the sudden pain. When I saw her in 1886 these headaches had changed in character and were of a dull, persistent nature and located in the occipital region. At that time the motility of the eyes was unimpaired, the irides and pupils were normal, and the media were clear. An examination of the eyes gave the following results: R. E., $\frac{20}{30}$, unimproved. Reads Jaeger 4 with sph. + D. 1·50. Small positive central scotoma for form and color. Color-sense normal outside the limits of the scotoma. Ophthalmoscopic examination negative. L. E., $\frac{2}{200}$ eccentrically. Large irregular central scotoma. Total color-blindness. Neuro-retinitis in the stage of decline, but without hæmorrhages or positive exudation and without papillitis. Optic nerve in the first stage of atrophy, with slight discoloration of the disc, and with the arteries and veins reduced in caliber. At times there is entire obscuration of the field of vision of the right eye, which always occurs slowly and as slowly disappears. The hearing was normal, the knee-jerks were normal, there was no difficulty in walking, and the dynamometer gave a fairly normal result. The urine was repeatedly examined, and showed nothing abnormal, save an excess of urates.

Under observation, the vision in the left eye gradually sank to distinguishing the movements of the hand eccentrically, and the vision of the right eye diminished to $\frac{20}{70}$. The left optic disc became atrophied with indistinct outline. The patient was seen at intervals up to the spring of 1890, when she died. The headaches gradually returned with increasing severity and frequency, and she became at times mildly delirious. During the last year of her life she had repeated attacks of unilateral convulsions, mainly confined to the left side, but occurring occasionally on both sides, and she died in an unusually violent convulsion, which seemed to be general in character. This patient had never had syphilis or any symptom of tuberculosis, though the latter disease existed in her family.

The autopsy showed extensive pachymeningitis of the convexity of the left cerebral hemisphere, most marked over the anterior lobe, with some patches over the anterior lobe of the right hemisphere, and one large patch, the size of a fifty-cent piece, over the parietal lobe of the right side, low down. All the arteries at the base of the brain were thickened and their lumen was narrowed, and this was particularly marked in the left anterior and middle cerebral arteries. The optic tracts and chiasm presented no macroscopic changes. There was no exudation and no pachymeningitis at the base of the brain. There were no extravasations of blood anywhere within the brain.

The relation of cause and effect in this chain of symptoms seems difficult to unravel. We have to deal, first of all, with a sudden and violent mental shock, followed immediately by convulsions, and ending in profound nervous prostration. On recovering from this latter condition, menorrhagia set in, and was followed by night-blindness of one eye and gradually increasing loss of vision, with both subjective and objective central scotoma for form and color. Headaches then began, which were at first boring in character and located at the vertex, but subsequently became of a dull, persistent character, and were centered in the occipital region. Then the second eye became affected in the same way, while the first eye developed a neuro-retinitis which ended in atrophy. Then followed unilateral convulsions, transient attacks of amblyopia in the second eye, and, finally, a general convulsion, ending in death. Reasoning from the results of the autopsy, the endarteritis was probably already well developed at the time of the occurrence of the mental shock, which, in its turn, hastened the progress of the arterial degeneration and indirectly the development of the pachymeningitis. The neuro-retinitis was probably to be attributed more to the long-continued loss of blood than to the pachymeningitis of the convexity, for, though there was marked disease of the arteries at the base of the brain, there was no meningeal complication in this region. The occurrence of night-blindness as the first symptom of the loss of sight was unusual, as there was no extensive retinal lesion in the fundus, and none at all at the periphery. The scotoma in the field of the right eye gradually increased in diameter until it reached 45° on the nasal side, 60° on the temporal side, 35° upward, and 40° downward. The convulsions were probably the result of the vascular degeneration and the meningeal inflammation.

CASE II. *Sarcoma of the Optic Chiasm and Nerves.*—A young man, aged twenty-four, called on me in February, 1888, and gave the following history: For more than a year he had suffered from headaches, which were at first confined to the frontal region and were slight and transient. They, however, increased somewhat rapidly in severity and intensity, and involved the whole head, so that at times he felt as if his skull would burst. After about six months had passed there appeared muscular twitchings in the upper extremities and face, and occasional attacks of vertigo, but with no loss of consciousness. About the same time the vision of both eyes also became affected, as if a slight haze covered everything, and this gradually grew worse. Three weeks before I saw him, while he was in the third story of an unfinished building superintending some work, a very violent headache came on accompanied by vertigo, and this was succeeded by a general convulsion, in which he fell to the ground, a distance of thirty feet, striking on his back and side. He was unconscious for a few minutes and then came to his senses, and after a while stood up and walked home, a distance of nearly half a mile, without assistance. This was his first convulsion and there has been none since. The headaches became constant and are at times very severe. An examination revealed nothing abnormal in the appearance or motility of the eyes. The irides and pupils were normal and the media clear. The optic nerves were very hyperæmic and the veins pulsated, but the outlines of the papillæ were clearly defined and the retinæ were intact. There was no diplopia. The field of vision showed a slight concentric narrowing in each eye. Vision was $\frac{20}{100}$ in both eyes. The hearing was normal, and there was no tinnitus. The patient had never had syphilis, and appeared to be in a good state of health. The urine was carefully and repeatedly examined, but nothing abnormal was found except a high specific gravity. It seemed impossible to make a satisfactory diagnosis, though, from the persistence and severity of the headaches, the muscular twitchings, and the convulsion, the presence of a tumor was suspected. Before I saw the patient he had had four partial tenotomies done for the relief of his headaches—three on the right eye and one on the left—but with no result. His refraction was hypermetropic, D. 0·75 in each eye under atropine. He had no astigmatism. Potassium iodide was administered, and he was requested to report at the office once a week, which he did faithfully as long as he was physically able to do so. The vision slowly grew worse, and the concentric limitation of the fields gradually increased. The headaches continued in spite of the large doses of potassium iodide (sixty grains three times a day), and after two months it was discontinued, as he began to show signs of iodism. About three months after I first saw him the optic discs lost their hyperæmic condition and began to grow pale. Strychnine was then administered, but he was obliged to discontinue it, as it made his headaches worse. Nearly five months to a day after I first saw him he had a violent convulsion, lasting nearly six minutes, and this was followed by a second some hours later, after which he never had another. The optic discs rapidly assumed an atrophic condition, the field grew very narrow in both eyes, and vision sank to $\frac{20}{200}$. He became very irritable, and this condition was followed very soon by a stupid, somnolent state, which gradually deepened into profound coma, in which he lay for nearly ten days before death came—about eight months after his first visit. The autopsy revealed nothing abnormal on the convexity of the brain, but the skull in the vicinity of the left fronto parietal suture was very much thickened, and the dura mater was very firmly adherent to it. On attempting to remove the brain from the skull, a growth was apparently discovered at the base in the vicinity of the sella turcica. After much careful dissecting in the vicinity with the handle of the scalpel and the finger, and division of the spinal cord as low down as it could be reached, the brain was removed, and it then became possible to study the location of the tumor. It was as large as a Brazil-nut, and involved very closely the optic chiasm, both optic nerves near the chiasm, and the hypophysis. It was moderately hard, with a smooth surface, and, on being divided, was seen to be of a grayish hue and of the same consistence throughout. The optic nerves just beyond the chiasm were flattened by the pressure of the tumor. The growth did not seem to extend backward into the optic tracts, nor upward into the hemispheres, but it had made a distinct depression in the under surface of both hemispheres. It was somewhat firmly adherent to the dura mater at the base. Macroscopically the tumor had apparently originated in the optic chiasm or in the connective tissue surrounding it. There were no other lesions discoverable anywhere in the brain after a most minute examination had been made. The tumor was carefully hardened and then examined microscopically. It proved to be a small cell sarcoma, tolerably vascular in character, with relatively great development of the connective-tissue framework. It could not be accurately determined whether it had originated in the hypophysis or in the connective tissue of the chiasm. The nerve-fibers were in many places entirely atrophied, and this was particularly noticeable in the origins of the optic nerves. There were no signs of meningitis or of neuritis, and the case seemed to be one of simple atrophy from compression. Papillitis or choked disc was conspicuous by its absence, which was an interesting point in the case. Another interesting fact was the very small number of convulsions which occurred in the course of the development of the tumor, and the long period—nearly six months—which elapsed between the first and second convulsions. The autopsy showed that no injury to the skull had been caused by the severe fall of thirty feet, and this corroborated the statement made by witnesses of the accident that he had struck on his back and side, and not on his head. No satisfactory attempt was made to locate the tumor before death, and not the slightest suspicion was entertained that the growth involved the optic chiasm.

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* Read before the American Ophthalmological Society, July 21, 1892.

Case III. *Sarcoma of the Left Occipital Lobe of the Brain; Bilateral Right Hemianopsia.*—In December, 1888, a gentleman, aged thirty-seven years, presented himself at my office with the following history: For the past seven months he had noticed a loss of vision in the right half of each field. For about two months previous to the appearance of the hemianopsia there had been a constant severe headache in the left parietal and occipital regions, but this pain gradually grew less and finally subsided. Six weeks ago he suddenly lost completely the sense of smell. For the last three weeks he had noticed a failure of vision in the remaining portion of the field of the left eye. Examination showed nothing abnormal in the external appearance of either eye, and the motility of both eyes was unimpaired. R. E. = $\frac{20}{100}$, with sph. − D. 1 $\bigcirc$ cyl. − D. 1·50 axis 180° = $\frac{20}{50}$. L. E. = $\frac{20}{70}$, with cyl. − D. 1·50 axis 180° = $\frac{20}{40}$.

The media were clear. Both optic discs were pale, the discoloration being most marked on the temporal side and in the left eye. There was a slight reduction in the caliber of the retinal arteries. The perimeter showed a bilateral right hemianopsia, with some concentric limitation in the remaining half of the field in each eye. At the time I first saw the patient there were no other symptoms than those already mentioned. He had contracted syphilis twelve years before, the chancre being followed by secondary symptoms, but he had been entirely free from constitutional symptoms for more than six years until his headaches appeared, and these were confined to the left side. No explanation could be offered for the recent sudden onset of the anosmia, which lasted till the death of the patient. There was no interference with the sense of hearing, and nothing abnormal in the appearance of the drum-heads. A careful rhinoscopic examination showed nothing but a mild form of chronic naso-pharyngeal catarrh, with some hypertrophy of the adenoid tissue in the naso-pharynx. In spite of the absence of other symptoms, the hemianopsia and the beginning atrophy of the optic discs pointed to the existence of a lesion in the brain on the left side, and probably somewhere in the vicinity of the cuneus. With the patient's syphilitic history, it was supposable that the intracranial lesion was a gumma, and on that supposition potassium iodide was given for a period of nearly three months, the dose being increased until he took six drachms daily, which he bore very well. But, instead of there being any improvement, there was a progressive loss of vision and a steady increase in the concentric limitation of the field of both eyes. About two months after he came under my observation the headaches returned in the left occipital region, and finally became continuous, although they were never very severe. The potassium iodide was then stopped as useless, and the only treatment consisted in relieving the patient's symptoms as they arose. There was never any hemiplegia or hemianæsthesia and no symptoms of motor disturbance till two weeks before his death, when he began to have muscular twitchings of the face and hands, which never amounted to an actual convulsion. He gradually became stupid, lost his memory, sank into coma, from which he at first could be aroused but which soon became profound, and in this condition he died, not quite fourteen months after the first occurrence of his headaches.

The autopsy proved the diagnosis of an intracranial tumor and its location to have been correct, but the microscopic examination showed that it was not a gumma. The tumor, the size of a large walnut, or rather olive, was found in the cuneus on the left side. It lay close to the median line and near the base of the left occipital lobe, its long diameter pointing to the left side. It was of firm consistence, perfectly smooth, apparently inclosed in a capsule, and the surrounding brain tissue seemed to the naked eye normal. There was no other lesion found in the brain. Careful examination was made of the vicinity of the olfactory nerves, but there was no sign of any inflammatory or softening process. The olfactory lobes were atrophied and the olfactory nerves reduced to mere threads. Not a trace of meningeal or periosteal inflammation could be found anywhere within the skull. An examination of the tumor showed it to be a typical example of the small-cell sarcoma, with marked development of connective-tissue trabeculæ. In this patient the pulse, respiration, and temperature were closely watched, but there was nothing abnormal observed till toward the end, when there was a slight evening rise in the temperature.

Case IV. *Thrombosis of the Middle Cerebral Artery; Recent Clot in the Middle Cerebral Lobe; Sarcoma of the Right Optic Tract; Bilateral Left Hemianopsia.*—Early in October, 1889, an old lady, aged seventy-two years, was brought to me by her son, who gave the following history: About six months before, having gone to bed one night as well as usual, she was awakened early the next morning by a severe pain in her head, a sense of confusion, and apparently total blindness in the left eye. She had previously been in fair health, but close questioning brought out the fact that she had suffered from headaches at intervals for more than a year, which she had attributed to some abnormal condition of her stomach. She was confined to her bed for several weeks, complaining all the time of the blindness, confusion of ideas, and a numbness of her right arm and leg. She slowly recovered from most of these symptoms, but ever since she has been blind on the left side in both eyes.

An examination showed the following condition: Slight ptosis of both upper lids, but no diplopia. Speech still thick and slow, as if she were searching for a word. The tongue pointed to the left side. Partial right facial paralysis. R. E. = $\frac{20}{30}$. L. E. = $\frac{20}{40}$, unimproved. Irides and pupils normal. Slight peripheral and nuclear opacities in both lenses. Some small floating opacities in the vitreous of both eyes. Ophthalmoscopic examination negative. The perimeter showed typical bilateral left hemianopsia, and in addition concentric limitation of the halves of the visual fields still remaining. There was organic valvular disease of the heart, with aortic obstructive murmur and hypertrophy of the organ. Several exhaustive analyses of the urine gave negative results.

In going carefully over the history of the case, I thought the patient had probably had a thrombosis and subsequent rupture of the middle cerebral artery on the left side; and, from the condition of the heart and blood-vessels, I gave an unfavorable prognosis and an opinion that she would probably die in another similar attack at no distant day. She lived, however, for nearly twenty months, during which period the fields remained practically the same. The vision, however, slowly failed, which may have been partially due to the growth of the cataracts. The bilateral left hemianopsia, however, together with the headaches existing for nearly a year before the sudden attack of thrombosis, aroused a suspicion that there might be an intracranial tumor, and she was carefully watched until the end came, without discovering any additional symptom. There had never been any loss of motion in the extremities, and the ill-defined right hemianæsthesia entirely disappeared. She was found one morning unconscious and breathing stertorously, and remained comatose until the end, three days later, April 29, 1891.

The autopsy revealed a very interesting condition of things in the brain. In the left anterior lobe of the cerebrum was a patch of softening as large as a horse-chestnut, and in a branch of the middle cerebral artery running through it there was an old plug which obliterated its lumen entirely. There was a recent rupture of a large branch of the middle cerebral artery on the left side, and a large clot of blood in the middle lobe of the brain, close to the fissure of Sylvius. All the arteries of the brain were diseased, and some of them extensively so. At the base of the brain on the right side, overlying the right optic tract and pressing upon it, was a small tumor about the size of a hazel-nut, situated just in front of the corpus geniculatum laterale but not pressing upon it. The tumor seemed to be developed in the right optic tract, which it partially surrounded and compressed. It was of firm consistence and smooth surface, and proved on examination to be a small-cell sarcoma, originating in the optic tract itself. Here was the probable cause of the hemianopsia and of the headaches which preceded the attack of cerebral thrombosis by nearly a year. It seems strange that there was no ophthalmoscopic sign of cerebral disease such as neuroretinitis or papillitis when I first examined the patient, but these may have appeared later, when the advancing opacity of the lenses prevented further ophthalmoscopic investigations.

Case V. *Glio-sarcoma of the Cerebellum.*—A gentleman, aged thirty-five, called on me in February, 1890, and gave the following history: He had been perfectly well up to about three years before, when he began to suffer from frontal headaches. He had been an overworked man for many years, confined for long hours to office work, and devoting the evenings and late into the night to professional studies. His general health had always been exceptionally good, but the years of overwork and great strain had told upon his strength, and the headaches gradually increased in frequency and severity. At first confined to the frontal region, they subsequently extended all over the head. They were in the beginning intermittent, and were occasionally accompanied by nausea and vertigo. For the past three months they had been constant and at times very severe, but the nausea had disappeared. Four years ago he had received a severe blow on the left side of the head from a falling wooden shutter, which knocked him down but did not cause unconsciousness. There was bleeding from the left ear at the time, which, however, soon stopped, and was not followed by any purulent discharge. Tinnitus began in this ear at once, and the hearing was impaired and steadily grew worse. About three months before I saw him tinnitus began in the right ear and has continued ever since, but the hearing of this ear is not impaired. His condition did not vary much, with the exception that the headaches increased in frequency and severity, until about nine months before I saw him, when he suddenly began to see double. This diplopia was at first accompanied by transient attacks of blurred vision, which later became permanent and progressive. By the advice of friends he consulted an oculist, who told him that he was astigmatic and had extreme hyperphoria and esophoria, and that he must have the muscles of his eyes divided and wear glasses. He became a victim of the partial-tenotomy craze to the extent of five operations, without receiving any benefit. The diplopia increased his vertigo and general unsteadiness of gait, so that he was afraid to go alone in the street, especially at night. About six weeks before I saw him he first noticed a loss of sensation on the left side of his mouth, pharynx, tongue, and lips, and this still remained. When he presented himself to me he had an anxious, worried expression, and a visible convergence of both eyes, from paresis of both external recti muscles. The paralysis was not complete, as both eyes could be moved outward toward the external canthi. R. E., $\frac{20}{100}$. L. E., $\frac{20}{50}$, unimproved. Irides normal in reaction and pupils of natural size. Media clear. The fundus of each eye showed marked papillitis, with numerous hæmorrhages, all the symptoms being more marked in the right eye. Homonymous diplopia for all distances. The perimeter showed an irregular central scotoma for color, but not for form. The patellar tendon reflex was normal, and the dynamometer showed no difference between the two sides of the body, and no apparent loss of power. The patient had never had syphilis. Repeated examinations of the urine showed albumin, but no casts. When he walked his vertigo was at times so marked that he staggered and apparently rotated toward the right side, and this was not materially lessened by closing one eye. At other times he apparently had no vertigo, and he walked perfectly straight when one eye was excluded.

A diagnosis was made of intracranial tumor, probably located in the occipital lobe or in the cerebellum. The patient was under observation at brief intervals from February, 1890, till his death in April, 1891. His vision slowly grew worse, until he could only recognize the movements of the hand. There was no very marked change in the fundus, the papillitis remaining at about the same stage throughout, with the occurrence of fresh hæmorrhages at intervals. The headaches became frightful in their intensity, and could only be controlled by large doses of morphine. Toward the end he was at times wildly delirious, and about a week before his death he sank into a stupor which rapidly deepened into profound coma, from which he never rallied.

The autopsy showed that the diagnosis and location of the tumor had been correctly made. A tumor, nearly globular in form, measuring about an inch in its longest diameter, was found in the right lobe of the cerebellum, close to the peduncle. It was of rather soft consistence, and proved to be a glio-sarcoma. It had compressed the convolutions of the cerebellum mainly upward and outward.

The chief interest in this case lies in endeavoring to trace the cause of the development of the tumor. A patient, the slave of excessive mental work for years, receives a sudden violent blow on the left side of the head, which causes bleeding from the left ear, tinnitus, and impaired hearing. Subsequently he begins to suffer from headaches, at first frontal but subsequently becoming general, and increasing in frequency and severity, until they become constant and are accompanied by nausea. Then follow vertigo on walking, tinnitus in the opposite ear, and a sudden attack of homonymous diplopia, which is found to be due to paresis of both external recti muscles. Immediately succeeding the diplopia comes defective vision in both eyes, which is found to be due to papillitis with hæmorrhages. The vertigo increases, the patient apparently rotates toward the right side in walking, and the loss of vision and headaches become worse, till delirium sets in, ending in coma and death. The weak point in the relation of cause and effect, between the blow on the side of the head and the development of the cerebellar tumor, is that the traumatism occurred on the left side over the parietal and frontal bones, while the tumor was found on the right side.

JAVAL'S OPHTHALMOMETER AND ATROPINE IN DETERMINING ERRORS OF REFRACTION,

WITH AN INCIDENTAL NOTICE OF EYE-STRAIN AND GRADUATED TENOTOMIES.

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(*Concluded from page 296.*)

Graduated Tenotomies.—Having shown by the foregoing cases that the determination of errors of refraction without the use of atropine is eminently scientific and not unscientific, as the author of the two articles upon eye-strain referred to in the beginning of this paper has asserted, it now remains to notice some of the extraordinary allegations in those articles.

The statements in these articles upon eye-strain, now under consideration, would deserve to go by unnoticed did they nottend to lead the general practitioner astray; for to the serious-minded specialist they are rather a source of amusement and surprise than of interest. The style of writing is characteristic. The author begins first by maligning his fellow-practitioners, especially those opposed to his views—to wit: "Most of the medical contributions that have lately appeared as antagonistic to the view that 'eye-strain' constitutes an important factor in the neuropathic tendency, and that functional nervous diseases can be relieved or modified by eye treatment, are based largely upon statistics derived from the observations of those who *are manifestly ignorant* of the latter methods of examination, or who fail to employ them from *bigotry* and *prejudice*." (Italics mine.) Secondly, in referring to the cases sent to him he has this to say: "These patients took no drugs, they continued in their customary vocations, and *they got well. All former experiments with drugs and doctors had failed to bring about a like result.* (Italics mine.) To many of these patients the verbal or written opinion of prominent medical men had been given prior to my seeing them 'that *organic disease* unquestionably existed, and that the eyes had nothing to do with the causation of the symptom,' and several had been pronounced by conscientious medical advisers as incurable." * Thirdly, the adulations of patients are rather freely given, as: "Your patient is the wonder of this region. She rivals the 'Jersey Lily' in her feats of walking." Another from a mother: "This seems almost a *miracle* when one remembers how the boy suffered before coming to you." Worst and last from a friend, alluding to the cure of one of his patients as one "not of cure, but of resurrection."

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* *Loc. cit. N. Y. Med. Jour.*, June, 1892, p. 649.

View our critical author again as a giver of medical advice, first, to his benighted brother oculists, of whom he has formed a very bad opinion on account of some of their assertions that have come to "his own ears" through patients, which are, in his own words, "indicative of inexperience, bigotry, or prejudice." And, further: "In the light shed upon a field of scientific inquiry by such a set of remarkable cases [our author's cases], is it not a justifiable source of surprise that many oculists of prominence, in full possession of the facts, refuse to-day to *follow implicitly*, and others even to try, a method of treatment whose details have been quite fully described in medical literature?" We never thought before that it was an attribute of great-mindedness, at least in this day and generation, to follow any one implicitly, especially on very doubtful ground. And when a method has been tried, as has been the case with graduated tenotomies, and found wanting nine hundred and ninety-nine times in a thousand, or rather a thousand times in a thousand cases, then it is time to give it up. Graduated tenotomies have been tried at the Manhattan Eye and Ear Hospital, but have long ago been abandoned by all the surgeons. Dr. Webster and Dr. Pomeroy sometimes, very rarely, for a muscular insufficiency, do a tenotomy, a *complete* tenotomy, but *not* a *graduated* or *partial* tenotomy. Dr. Pomeroy "cuts till he gets effect," each time doing a complete tenotomy, and, if he gets a temporary over-effect, thinks it just as well or better than otherwise. Dr. Emerson, for a marked muscular insufficiency, also favors a complete tenotomy. Roosa's views upon this subject are well known.

But to return to the author of Eye-strain. His advice to the general practitioner seems to be given in the interest of revenue only. Listen: "We are now prepared to pass to the consideration of some cases that I have selected from my case-books, in order to *demonstrate*, if possible, *beyond cavil* [among other laudable acts] that it *is the duty* of a physician to have the eyes of all patients afflicted with abnormal nervous disturbances examined early by *some oculist who is familiar with and employs the latest methods.*" (Italics mine.) That would be a rich harvest for the latest-informed oculist, I must say. But how about Dr. Falloppius, who, only a few years since, insisted on cutting out the ovaries for "abnormal nervous disturbances," unsexed a great number of women, and in many instances did more harm than good? Again, have not the aurist, the laryngologist, the genito-urinary surgeon, the rectal surgeon, and the dietetic physician the same claim upon the physician in his cases of abnormal nervous disturbances as the oculist? I know of none among them, however, who has the courage to demonstrate beyond cavil that it is the general practitioner's duty to send all such cases to him. We have much to learn perhaps.

It has been necessary to make the preceding remarks because the author of the brochure upon Eye-strain indulged in eight columns of explanations of his own good results and other people's bad results before reporting his cases. We pass now to a brief consideration of those cases, and we must say the reported results are wonderful.

I reproduce, first, the table of cases as given by him, believing that is the best and quickest way to get at them, and to show that the criticisms are fair:

Case.	Sex.	Age.	Symptoms.	Duration.	Former treatment.	Previous diagnoses.	EYE TESTS.		Eye treatment.	Results.
							Refractive errors.	Muscular errors.		
1	Male.	41	Complete mental and physical collapse. Insomnia. Severe neuralgic attacks.	1 year. 6 months. 20 years.	Medicinal, massage, water treatment, electricity, diet, etc.	Organic cerebral softening (by several physicians).	O. D. +0·50 s. +0·75 c., ax. 90° O. S. +1·25 s. +0·50 c., ax. 90° Hypermetropia. Astigmatism.	Left hyperphoria, 4°. Esophoria, 7°.	Spherical and cylindrical glasses. Graduate tenotomy of left sup. rectus. Graduated tenotomy of right internal rectus	A practical cure. Patient still has some headache, but has entirely regained his mind and is able to resume control of his finances. The insomnia and neuralgia have ceased.
2	Male.	19	Epilepsy. Epileptic mania.	5 years. 2 years.	Enormous doses of bromides, with chloral, arsenic, and other drugs, without any relief.	Epileptic mania (papers were drawn to commit the patient to an asylum as an incurable).	No defect in either eye, even when under full effects of atropine.	Esophoria (mostly latent). Right hyperphoria (entirely latent at first visit).	Wearing of prismatic glasses. Graduated tenotomy of right sup. rectus. Graduated tenotomy of each internus.	One attack during past two years. Patient has taken no drugs for nearly four years, and has entirely regained his mental and physical strength. Both had been seriously affected by the bromides in the past.
3	Male.	43	Epilepsy.	24 years.	Enormous doses of bromides for many years without benefit, cerebral galvanism, massage.	Epilepsy (from early masturbation and later sexual excesses).	Hypermetropia. O. D. O. S. +2·50 s. (Entirely latent, and therefore unsuspected by the patient.)	Esophoria (mostly latent).	Full correction of the hypermetropia by spherical glasses. Graduated tenotomies upon both interni.	An apparent cure. Patient taken no drugs and has had no seizures for nearly six years.
4	Male.	35	Epilepsy	Unknown.	Unknown.	Epilepsy.	O. D. +1·50 s. −2·75 c., ax. 180° O. S. +1·50 s. −2·75 c., ax. 180° Hypermetropia. Astigmatism.	Esophoria, 4°.	Spherical and cylindrical glasses only.	An apparent cure. Patient has not had a fit since April, 1890.
5	Male.	26	Epilepsy. An approach to mental imbecility from bromides.	6 years. Since bromides were begun.	Bromides in very large doses, causing serious mental sluggishness and apathy.	Epilepsy. This patient had seen many physicians of eminence and none had disagreed on the diagnosis.	O. D. +0·50 c., ax. 90° O. S. +4·00 c., ax. 180° −1·00 c., ax. 90° Hypermetropia. Astigmatism.	Esophoria, 11°.	Correction by spherical and cylindrical glasses. Graduated tenotomies upon both interni.	Patient has not had a fit for eighteen months. Has taken no drugs. Has regained his intellect and gone into business pursuits. Travels without an attendant and weighs eighteen pounds more than when eye treatment was begun.

Case.	Sex.	Age.	Symptoms.	Duration.	Former treatment.	Previous diagnoses.	EYE TESTS.		Eye treatment.	Results.
							Refractive errors.	Muscular errors.		
6	Female.	21	Complete nervous prostration. Constant pain in head. Inability to walk.	5 years. 5 years. 5 years.	Electricity, massage, drugs of all kinds.	Organic spinal and brain disease (by several physicans).	O. D. + 1·25 s. O. S. + 1·25 s. Hypermetropia.	Left hyperphoria, 2°. Exophoria, 2°.	Spherical glasses. Graduated tenotomies upon both externi and left superior rectus.	Patient is now teaching gymnastics in a ladies' school.
7	Female.	42	Nervous prostration. Trembling of face and limbs. Neuralgic attacks of a violent form.	10 years. 8 years. 16 years.	Electricity, massage, drugs of all kinds, uterine treatment.	Organic disease had been strongly suspected. This patient had employed physicians by the score and had received no benefits from drugs.	Emmetropia. (No defect, even under atropine.)	Esophoria, 3°. (A much higher degree of latent esophoria disclosed itself later).	Graduated tenotomies upon both interni.	This patient had never suspected any eye trouble; but made a perfect recovery within a month after the last tenotomy was performed. Five years have elapsed without a return of a single symptom. For over sixteen years she had been a hopeless invalid.
8	Female.	42	Great despondency. Confusion of mind and thought. Loss of emotional control. Confirmed sleeplessness. Constant headache.	1 year. 1 year. 1 year. 1 year. 1 year.	Had consulted an oculist who "found nothing wrong in the eyes." Had been under care of a specialist who prescribed drugs, electricity, and restricted diet, with only partial and temporary benefit. Had never used glasses, even for reading or sewing.	Organic brain disease had been suspected. One physician "feared the approach of melancholia." Undoubted symptoms of insanity had appeared at times.	Hypermetropia. O. D. + 0·75 s. O. S. + 0·75 s. (Under atropine.) Presbyopia. Spherical glasses (+2·50) tolerated well for reading, sewing, etc.	Esophoria, 7°. Right hyperphoria, 2°.	Spherical glasses for distance. Strong reading glasses. Graduated tenotomies upon both interni and right superior rectus muscle.	This patient was enabled to resume her profession, and was restored to health without the use of drugs until within a week of her death. The full history of this case is of special interest.
9	Male.	23	Melancholia. Morbid impulses. Severe neuralgia (of bladder and prostate gland).	1 year. 1 year. 8 months.	This patient had been treated for months by a specialist for *prostatic disease*. He had also taken drugs of all kinds for his mental condition.	Cerebral congestion. Organic brain disease had been suspected.	Hypermetropia. O. D. + 2·50 s. O. S. + 2·50 s. (Entirely latent and unsuspected by patient.)	Esophoria, 12°.	Spherical glasses for constant wear. Graduated tenotomies upon both interni.	Complete cure. The patient is restored to mental and physical health, and has resumed his profession. All neuralgic attacks have ceased for past five years.
10	Male.	46	Nervous prostration. Sleeplessness. Pain in head.	15 years. 15 years. 15 years.	This patient had been under constant medical care. Drugs gave no benefits or relief.	Cerebral congestion. Excessive business cares.	Hypermetropia. O. D. + 1·00 s. O. S. + 1·00 s.	Esophoria, 13°.	Graduated tenotomies upon both interni.	Complete recovery. During the past two years this patient has had no return of his former symptoms.
11	Female.	45	Complete nervous prostration. Chronic bladder trouble. Chronic sleeplessness.	1 year. 5 years. 1 year.	Patient had been confined in bed for about one year from nervous collapse. Drugs of all kinds had been administered without permanent benefit. Uterine treatment had accomplished nothing.	Some obscure form of abdominal disease had been suspected by the many physicians who had seen her in consultation.	Hypermetropia. O. D. + 1·75. O. S. + 1·75. Presbyopia. + 4·50 s. needed for reading or sewing.	Right hyperphoria, 3°. Esophoria, 7°.	Spherical glasses for distance, and stronger ones for reading or sewing. Graduated tenotomies upon both internal recti and the right superior rectus muscle.	This patient has been able to walk for miles and to take full charge of her house since the tenotomies were performed (two years and a half ago). She has taken no drugs, sleeps well, and is apparently restored to perfect health.
12	Male.	23	Chronic neuralgia. Asthenopia. Headaches.	10 years. 5 years. 10 years.	Drugs of all kinds without beneficial results. Patient had contemplated suicide.	Some local disease was suspected as the exciting cause of the neuralgic paroxysms.	Hypermetropia. O. D. } O. S. } + 2·00 s.	Esophoria, 6°.	Spherical glasses for distance, and stronger ones for reading. Graduated tenotomies upon both internal recti muscles.	Complete cure. (No neuralgia for past two years.)
13	Female.	40	Nervous prostration. Confirmed digestive troubles. Inability to walk or endure fatigue.	6 years. Most of her life. 6 years.	Uterine treatment for years. Drugs of all kinds. "Rest cure" (for 3 consecutive months). Electricity for months. Massage.	The uterine trouble was always supposed to be the chief cause of the physical weakness.	Hypermetropia. O. D. } O. S. } + 1·50 s.	Esophoria, 4°.	Spherical glasses for reading, sewing, etc. Graduated tenotomy upon the left internal rectus muscle.	Complete cure for past six years. This patient can walk for miles, and her digestive functions are perfect.
14	Female.	45	Nervous prostration. Abnormally large pupil in one eye. Confirmed sleeplessness.	Several years. 12 years. 1 year.	Had taken drugs of all kinds. Had consulted a prominent oculist without benefit. The wife of a prominent medical lecturer and practitioner.	The diagnosis in this case had been very obscure to all that had been called to examine this patient	Hypermetropia. Astigmatism. O. D. + 1·50 s. ⊃ + 0·50 c., ax. 75° O. S. + 1·50 s. ⊃ + 0·50 c., ax. 105°	Apparent orthophoria.	Spherical and cylindrical glasses for constant wear were alone prescribed.	A very rapid recovery of strength, and a return of the pupils to equal size. Almost complete relief of the insomnia.

Case.	Sex.	Age.	Symptoms.	Duration.	Former treatment.	Previous diagnoses.	EYE TESTS.		Eye treatment.	Results.
							Refractive errors.	Muscular errors		
15	Female.	26	Chronic chorea. Aggravated deformity of head and limbs. Headache. Asthenopia.	16 years. 4 years. 16 years. 16 years.	This patient had been seen by many physicians. Drugs and electricity had accomplished nothing.	Organic spinal disease had been suspected.	Hypermetropia. O. D. } +0·75 s. O. S. }	Esophoria, 20° (mostly latent). Left hyperphoria, 3°.	Graduated tenotomies upon both interni and left superior rectus muscle.	Relief of the deformity of the head and neck, and marked amelioration of the other symptoms. The patient was enabled to return to her former position, and has since been self-supporting.
16	Female.	33	Constant headache. Nervous prostration.	16 years. 5 months.	Has been under uterine treatment without relief. Has taken drugs, electricity, massage, etc., without ben'fit	Organic disease had been suspected.	Hypermetropia. Astigmatism. O. D. { +1·00 s. +0·75 c., ax. 115° O. S. +1·50 s.	Orthophoria.	Spherical and cylindrical glasses to fully correct all latent errors of refraction.	Rapid and complete cure. The patient walked four miles in less than a week. No return of headache for past two years.
17	Female.	10	Chronic chorea. Loss of power in right arm and both legs.	8 months. 6 weeks.	Drugs of all kinds.	Organic brain disease (by an eminent neurologist of New York)	Hypermetropia. O. D. } +1·00 s. O. S. }	Esophoria, 8°.	Graduated tenotomies upon both interni. Prismatic glasses for some months prior to tenotomies.	Complete restoration of power to the limbs, and disappearance of all choreic movements.
18	Female.	10	Constant headache (very severe). Steady decrease in weight.	14 months. 14 months.	Drugs. Rest from school. Country air. Had been examined by two noted oculists.	One oculist told the parents that the "child probably had tubercular meningitis."	Hypermetropia. Astigmatism. O. D. +0·75 s. O. S. +0·75 c., ax. 90°	Esophoria, 2°.	Cylindrical and spherical glasses, combined with prisms for the esophoria.	Immediate cessation of all headache, that has not since returned. This patient is now perfectly well.

It is manifest, at a glance at this table, that his whole report, from a scientific point of view, and especially in regard to muscular errors which he considers of so much importance, is rendered valueless from one important omission—that is, a statement of the conditions of the muscles at the close of treatment. If he had inserted a column in his table showing the condition of the muscles at the close of treatment as well as at the beginning, then we could have formed some idea of how much of the good effect was due to graduated tenotomies. How carefully he has avoided this! But I do him an injustice. In one case, and in *only one* (II), did he give the condition of the muscles at the close of treatment (not in the table, but in detail in the body of the brochure); and, strange to say, the "esophoria" and "hypophoria" were *exactly the same* at the close of the treatment as at the beginning, as follows:

"*Eye defects.*—On the 17th of November, 1888, patient showed normal vision in both eyes; adduction, 54°; abduction, 5°—; right sursumduction, 2°—; left sursumduction, 2°—; *esophoria*, 2°; *left* (right is meant, as is shown by reading case in detail) *hyperphoria*, 1°.

"*Condition at Close of Treatment.*—On December 26, 1889, the patient was again seen. He had experienced no return of attacks, was in excellent health, and had taken no medicine for thirteen months. *He still shows* 1° *of right hyperphoria; esophoria of* 2°; adduction, 58°; abduction, 7°—; right sursumduction, 4°; left sursumduction, 1°+. On April 2, 1892, this patient reported last at the office. He is still wearing 2° prism for the remaining esophoria." Though we see that the esophoria and hypophoria remained exactly the same (four graduated tenotomies were done), nevertheless, the "almost miracle" of a cure brought about in this case was thought to be due chiefly to graduated tenotomies. In fact, as the case is reported, it shows that graduated tenotomies had no effect whatever, and the cure must have been produced by the wearing of prisms, as that was the other treatment. As the condition of the muscles at the close of treatment in the fourteen other cases, where graduated tenotomies were done, was not given, we, of course, do not know how much effect the operations had, but if they did as much good as in Case II, where he did give a final report of the muscles, then they had *no effect*, and the whole report falls to the ground. To judge all the cases by one seems unjust, but we do this from necessity, as in only one case did he give a full report, and we measure the others by that.

We are now prepared to form a true idea of some of the wonderful cures brought about by graduated tenotomies, prisms, etc. In the table we turn first to—

Case I. *Of Complete Mental and Physical Collapse associated with Compound Hyperopic Astigmatism and Hyperphoria and Esophoria*—where, by a complete correction of the error of refraction and two graduated tenotomies, a "practical cure" was brought about. The case speaks for itself without comment further than it is my opinion that the glasses were the chief source of benefit.

Case II has already been discussed, and the potency of graduated tenotomies as a remedial agency shown, in this case at least, to be *nil.* I am of the opinion that the same *nil* effect of graduated tenotomies would have been shown in the other cases had the final condition of the muscles been reported.

Case III. *Chronic Epilepsy* (*of Twenty-four Years' Standing*).—Latent hyperopia of 2·50 D., and manifest "esophoria" 4°. By a full correction of the hyperopia and graduated tenotomies upon the interni, "an apparent cure" was effected. Here again we give the credit of cure to the glasses, and not to the tenotomies. The condition of the muscles at the close of treatment is not given; and, not only judging this case from the preceding (Case II), but from a case of epilepsy we have seen, where the attacks occurred twice daily, which were entirely relieved by glasses as long as they were worn, but returned on taking them off, we think the glasses could account for the benefit here derived.

I choose again to call attention to some of the logic indulged in by the author in this case.

"It may be well, however, for me to mention in this connection a few of the reasons why, in my judgment, the treatment of the eyes has totally failed, in the hands of some observers, to relieve or modify some nervous conditions that had withstood judicious medication for years; and why it is, subsequently, *in more experienced hands* (Italics mine), treatment of the same patients directed to their eye-muscles has led not infrequently to the happiest results.

"1. I would call attention to the fact that *preconceived notions about old methods must be abandoned without prejudice*, when a new method is to be tried.

"2. Each observer must of necessity make himself *thoroughly familiar with all the details of the method* which he proposes to employ before he is competent to decide *pro* or *con* respecting its merits."

If our author has made himself familiar with the use of Javal's ophthalmometer, the fact is nowhere manifested in the report of his cases. In not a single case (even the latest ones) is there an indication that the instrument has been used as an aid to ascertaining the condition of the cornea. It seems to have been ignored altogether. The use of the "phorometer" is loudly enough proclaimed, but the use of the "ophthalmometer," the most useful instrument in the practice of ophthalmology, unless it be the ophthalmoscope, is passed by lightly indeed.

Case IV—*chronic epilepsy*—is a very similar case to the preceding one, the error of refraction being one of mixed astigmatism and a muscular error of "esophoria" of 4°; the "esophoria" was ignored, full correction was given, and the patient made a good recovery. Why were 4° of manifest esophoria left uncorrected in this case?

Case V. *Chronic Epilepsy.*—Simple hyperopic astigmatism in one eye and mixed astigmatism in the other, with 11° of esophoria. A full correction of errors of refraction was ordered, and graduated tenotomies on the interni were performed. A cure reported.

Case VI. "*Complete Nervous Prostration* (*of over Five Years' Duration*), *with Constant Pain in the Head; Inability to use the Eyes, and to walk but a Few Steps.*"

Eye Defects.—Patient had latent hyperphoria of 1·25 D., and manifest esophoria of 2°.

Treatment.—Static electricity, which helped the walking very little, but had no effect on the pain in her head. Spherical glasses and graduated tenotomies on the externi and left superior rectus.

Result.—"Wonder of this region"; "engaged in teaching physical culture in a ladies' school." "The improvement gained by eye treatment has therefore been demonstrated to be not only permanent, but progressive."

I wonder if the graduated tenotomies had as much effect upon the exophoria and hypophoria in this case as upon the esophoria and hypophoria in Case II? Why is not the condition of the muscles *after* the operation given, so that the public can judge for itself how much effect the graduated tenotomies had? Simply reporting the patient as cured is *nil* to the public as a proof that graduated tenotomies brought about the cure, or even greatly helped in it, as is proved by Case II, where graduated tenotomies were performed, the patient got well, yet the esophoria and hypophoria for which the partial tenotomies were performed, and which presumably were causing the trouble, remained exactly the same. I must confess that this is somewhat paradoxical to me, but to those who perform miracles it may be simple and plain enough.

Case VII ("effect magical"; a friend alluded to this case as one of "resurrection"). "*Complete Nervous Prostration.*"

"*Eye Defects.*—The patient was found to be emmetropic (when under atropine). Esophoria (manifest) of 3° existed." From the symptoms narrated in this case—"impending suffocation," "spasm of the larynx," etc.—I should think it a clear case of hysteria, though the author thinks otherwise. And from the result obtained—"complete recovery of her health within two months"—I am still more inclined to my view, especially when we remember that there was no error of refraction detected (under atropine, which, by the way, is not always positive); and that for the 3° of manifest esophoria and a "high degree" of latent esophoria, only two graduated tenotomies were done. We have already seen *how much good* graduated tenotomies did. Practically, then, this patient had nothing done for her except suggestion. I have performed miracles of this kind myself. For instance, a patient was led into Manhattan Eye and Ear Hospital blind (?) by two attendants, and a single drop of a two-per-cent. solution of cocaine gave him sight!

Case VIII. "*Nervous Prostration with Symptoms of Melancholia; Confirmed Sleeplessness; Confusion of Mind and Constant Headache.*"

"*Eye Defects.*—Hyperopia, 0·75 D. under atropine. Esophoria, 3°, which under prisms came up to 7°. Adduction, 23°; abduction, 5°; right sursumduction, 1° +; left sursumduction, 2° +."

Treatment.—Full correction for distance, 2 D. for reading; afterward increased to 2·50 D. "A graduated tenotomy of the internus of both eyes was eventually performed *in order to properly adjust the balance between the two eyes.*" (Italics mine.)

Knowing the effect of graduated tenotomies, we can judge how much effect they had in "properly adjusting the balance between the two eyes." Giving them due credit in this case, *I* should say the glasses accomplished the good that was effected. All this talk about graduated tenotomies would seem to indicate that the error of refraction amounted to little indeed, but the error in adjustment of the muscles, indicated by "heterophoria," to a great deal. That "heterophoria" is of little importance is evidenced from the fact that it so often occurs. If not manifest, it is latent and can *always, in any case*, be induced by means of prisms. Any one who has practiced testing the eye muscles from day to day very well knows how they vary in strength—even within an hour's time the tests will be different. Hence the ignorance and stupidity displayed by those who habitually endeavor "to properly adjust the balance between the two eyes" by graduated tenotomies. They make *latent* esophoria and *latent* hypophoria to cover a multitude of sins. Whenever a case does not do as well as it should, they usually suspect a latent esophoria or hypophoria and *usually* find it.

This patient No. 8, who was resurrected, had a relapse of her nervous symptoms and died.

CASE IX was one of melancholia with morbid impulses, and severe neuralgia of the bladder and prostate gland, which was completely cured by full correction of 2·50 D. of latent hyperopia and graduated tenotomies on the interni. "His prostatic neuralgia was of a severe and intractable type, and its cause could not be discovered; yet it disappeared at once after a free operation upon the interni." I suppose this means that the genito-urinary surgeons are to turn their patients over to the oculists when they can not discover the cause of their troubles. Not a bad thing for the oculists.

CASE X. A case of "*Nervous Prostration*" completely cured by glasses and graduated tenotomies.

CASE XI. "*Complete Nervous Prostration, with One Year of Confinement in Bed and Chronic Bladder Trouble.*"

"*Eye Defects.*—Hyperopia, 1·75 D.; presbyopia, 4·50 D.; esophoria, 7°; adduction, 23°; abduction, 3° +. *Later on she disclosed right hyperphoria*, 3°."

Treatment.—Prisms, hyperopic glasses, and graduated tenotomies.

Result.—Bladder trouble relieved entirely. "The second day after the first graduated tenotomy she reported that she had walked a mile and a half." I should say that this was a wonderful result indeed, for this patient had been confined to her bed for a year, yet on the second day after a graduated tenotomy upon one of the eye muscles she walks a mile and a half. Again, "five days after the first tenotomy a second one was performed upon the other internal rectus, prisms having been worn in the mean time. Two days following this operation the patient *walked five miles*, visited an art museum in the morning, and attended a theatre in the evening." It seems to me from such statements that, in a combat between prize-fighters, their trainers would be guilty of a great oversight in their training of them if they failed to have graduated tenotomies performed upon their eye muscles. It can be demonstrated within a week's time that both have some form of "heterophoria." In fact, an induced heterophoria by means of prisms can be found in any subject. There is always in every individual a *latent* heterophoria, and always will be as long as we are living beings and not machines or automatons.

CASE XII. "*Facial Neuralgia so Severe as to prompt Suicide and Uncontrollable by Drugs.*"

"*Eye Defects.*—Hypermetropia (under atropine), + 2·00 s. Esophoria, 6°."

I want to call attention especially to the way in which atropine was used in this case.

"So intense was his agony that he declared something must be done at once, as he feared that he could not restrain much longer his suicidal tendency. Atropine was dropped into his eyes at once to determine his hypermetropia. He was told to protect his eyes from the light by a pair of dark glasses and return in *two hours.* He came in smiling at the appointed time, saying that his neuralgia had entirely disappeared. Two dioptres of hypermetropia was found, and a + 1·00 s. glass was given for constant wear. Later graduated tenotomies were done upon both internal recti for the relief of the esophoria, and a stronger glass (+ 2·00 s.) was given for reading. Since then he has had no attack of neuralgia, and has been perfectly well for two years. He occasionally, after severe eye work, has some slight symptoms of his old asthenopia."

Here we find a patient with two dioptres of latent hyperopia fitted with glasses in *two hours' time* after atropine had been dropped into the eye, and apparently from one instillation. Comment upon such practice is hardly needed. If this is a simple case of thoroughness of examination and a scientific use of atropine, then the times have changed, and patients' eye muscles with them. Atropine, when thoroughly used, is unreliable as to the axis of the glass in cases of astigmatism, as not very long since pointed out by Dr. Gould, of Philadelphia; and when used as in this case, is of no value scientifically or practically. It takes at least two or three days—not two hours—and sometimes much longer, to paralyze the accommodation with atropine; this is a well-established physiological fact.

CASES XIII and XIV were cases of nervous prostration, one of which was cured by glasses and graduated tenotomies, and the other by glasses alone.

CASE XV. "*Aggravated Type of Chorea, accompanied by Deformity, Headache, Asthenopia, and Inability to Work.*"

There are two or three remarkable things in this case to me. First, "that no one who had seen her could make a diagnosis." A case of aggravated chronic chorea ought certainly to have enough symptoms present so that no intelligent doctor could mistake the diagnosis. But perhaps the second remarkable thing in this case accounts for a lack of diagnosis by the doctors who had seen the patient. "No inco-ordination existed." How any one could have aggravated chorea and not have inco-ordination is a mystery to me. If inco-ordination does not exist when the patient can not make use of her limbs from spasmodic action of the muscles, then I fail to appreciate the meaning of the term inco-ordination.

"The region of the fourth button of her dress" also leaves us in doubt as to the position of the patient's chin when we do not know where the button was, high up or low down, front or back, for it may be in almost any of these places.

CASE XVI. *Constant Headache associated with Nervous Prostration.*—Treatment consisted simply in ordering the glasses for constant wear to correct her error of focus. "Rapid and complete cure."

CASE XVII. "*Chronic Chorea, Loss of Power in Right Arm and both Legs.*"—Treatment consisted in "wearing of prisms for some time, then graduated tenotomies upon the interni.

"*Result.*—Complete restoration of power to the limbs and disappearance of all choreic movements." The case speaks for itself and suggests a new treatment for paralyzed limbs.

CASE XVIII. Constant headache cured by wearing sphero-cylindric glasses and prisms.

So much for the eighteen remarkable cases and the statements made in connection with them.

If I have succeeded in the present paper by the report of the three hundred and eighteen cases of refraction in establishing the fact that it is not necessary or scientific to use atropine to determine errors of refraction, and incidentally by the review of eighteen cases, in most of which graduated tenotomies were done, have shown the absurdity of such a procedure as performing graduated tenotomy, then the purpose of the paper has been accomplished. One last thought in closing. How fortunate for the dignity of the ophthalmologists of America that but an exceptional few of them obtain wonderful, miraculous, and resurrecting results, and that by graduated tenotomies! A quotation from G. A. Berry, of Edinburgh, by St. John Roosa, in the *Medical Record*, March 26, 1892, p. 338, illustrates this point: "For my part, I regard the practice, which, to judge from the literature of the subject, is not uncommon in America, of frequently performing tenotomies, or so-called partial tenotomies, for lateral deviations as a disgrace to modern ophthalmology. As to the frequent ordering of prisms for similar conditions, that is a practice which, while it displays the same ignorance, is open to less serious objections, inasmuch as it only affects the pockets of the patient and that to a less extent than operative interference." Again, when in Paris last winter I asked an ophthalmologist, who perhaps knows more about refraction than any other man now living, what he thought of the men who frequently practiced graduated tenotomies for muscular insufficiencies. He replied by saying, if I would excuse him for saying so, "they display great ignorance."

463 Fifth Avenue.

A NEW OPERATION FOR PARALYTIC TALIPES VALGUS,

AND THE ENUNCIATION OF A NEW SURGICAL PRINCIPLE.

By B. F. PARRISH, M. D.

In writing this article at the present time, it is my object to present to the profession a principle of surgery which I believe to be entirely original, and one which I believe capable of producing very satisfactory results in a certain number of cases. The utility of the principle is naturally limited by the anatomical arrangement of the tissues involved. Heretofore the deformities resulting from complete paralysis of various muscles have been those which have been the least amenable to treatment without the continuous use of some mechanical support. They have been the ones which have given the surgeon the most bother and trouble and the patient the least hope and satisfaction.

The greater number of such deformities result from anterior poliomyelitis or infantile paralysis. As a rule, a good number of the muscles which are thus paralyzed in infancy recover their power more or less completely after a longer or shorter time. In some instances the child recovers perfectly. Then, again, in some instances all the muscles which were originally affected remain absolutely paralyzed. But the rule is as I have just stated, and this rule remains unchanged in spite of all the electricity, massage, etc., that the most skillful attendant can give.

The muscles of the lower limbs are those most frequently affected by this disease. The muscles of the leg are more frequently involved than those of the thigh. Of the leg muscles, the anterior and posterior tibials, the muscles of the calf, and the peroneals are, in the order named, I believe, the most frequently affected.

During last winter my attention was particularly drawn to such cases. In my own practice and in the private and hospital practice of Dr. Lewis A. Sayre and Dr. Reginald H. Sayre I was forcibly struck by the number of cases of paralytic talipes valgus in which the extensor proprius pollicis was unaffected. Exactly how often this muscle escapes in such cases I am unable to say. My observations and researches lead me to believe that in not more than two or three per cent. of the cases where the anterior tibial is paralyzed is the extensor longus pollicis also involved. As Dr. Sayre observes in his admirable book on *Orthopædic Surgery*, the extensor pollicis is often so strong in these cases as to almost or completely disarticulate the bones of the great toe at the phalangeal joint.

In cases where the anterior tibial was completely paralyzed, or so near so that it could not perform its function after careful and prolonged treatment by electricity, massage, etc., the idea occurred to me that the strong extensor pollicis might be able to bear part or all the burden of its weaker neighbor. Accordingly, I began a series of experiments on the cadaver to see if my theory could be put into practice.

After isolating both the anterior tibial and the extensor pollicis muscles, I placed the foot in the position of inversion and extension and sewed the shortened tendon of the first to the lengthened tendon of the latter. First I sewed the two tendons together above the annular ligament. Then, placing the foot in the position of extreme eversion, I pulled upon the belly of the extensor pollicis muscle, when the foot returned from its everted position, the arch was raised, and the great toe was extended. After thoroughly satisfying myself with this experiment, I then, on another subject, sewed the two tendons together below the annular ligament, and repeated the experiment with equally satisfactory results. Each time after the extensor pollicis had done the duty of the anterior tibial it resumed its own function. Thus satisfied that my principle was correct, the next thing to be done was to put it into practice upon the living subject.

On May 15, 1892, the first operation was done, with the assistance of Dr. Lewis A. Sayre and Dr. Reginald H. Sayre. The patient, May C., aged three years and ten months, had had infantile paralysis when eleven months old. At the time of operation both tibial muscles of the right leg were completely paralyzed, giving rise to talipes valgus. All the other muscles which had been involved had recovered. The foot could easily be put in the correct position. The extensor pollicis was moderately strong.

Under chloroform anæsthesia an incision was made over the space between the tendons of the anterior tibial and extensor pollicis muscles, extending from the annular ligament three inches or three inches and a half upward. Both the tendons were found and isolated. The tendon sheaths were cut away, and the foot was inverted and extended so as to shorten up the tendon of the anterior tibial and pull down the tendon of the extensor pollicis. The opposing tendon surfaces were then freshened with the knife and sewed together with a catgut suture for a space of an inch or more, and the wound was closed. The foot was then molded into the proper position and retained there by a plaster-of-Paris bandage, which was worn for a month. When the dressings were removed the wound was found perfectly healed and the foot in a much better position than before the operation. Since the operation I have been using electricity, massage, etc., loosening up the adhesions which naturally formed. From time to time since the first appearance of the paralysis the child has had recurring attacks of the same disease. Since the operation she has had one or two attacks. What will be the final outcome of the case I am unable to say at the present time.

I hope, however, to report her case in full at a later date, together with the report of several other cases which I have under observation.

In some cases a better result may be obtained by cutting off the tendon of the extensor pollicis and sewing it on to the common extensor of the toes, and then cutting the anterior tibial tendon and uniting the proximal end of the extensor pollicis to the distal end of the anterior tibial, thereby allowing the extensor pollicis only the function of the anterior tibial muscle. In cases where the posterior tibial is also paralyzed it may be necessary to sew its tendon fast to the tendo Achillis. *However, the important principle of grafting tendons and having a live muscle do the work of a dead one is that which I wish particularly to establish in this article.* As I have said above, this live muscle may also do its own work in addition to that of its neighbor, or it may have its original function transferred to still another muscle.

Although the anatomical arrangement of the muscles concerned in paralytic talipes valgus probably affords the best opportunity for the employment of the principle, it may be advantageously used in various other deformities where other muscles are paralyzed.

Where the muscles of the calf are paralyzed, thus giving rise to paralytic talipes calcaneus, we may sew the tendo Achillis to the tendon of the posterior tibial, provided that muscle is good and strong, or it may be attached to either the flexor longus pollicis or the flexor longus digitorum, with a reasonable hope of materially benefiting the patient. Should the common extensor of the toes alone be paralyzed, its tendons might be grafted to the extensor pollicis, to the anterior tibial, or to both. In other cases, too, the principle may be employed.

In any case, if the deformity is not readily reducible, it should be made so before any operation is done upon the tendons. If the tissues causing the deformity are only contracted, then stretch them until the deformity is thoroughly overcome. If the tissues are contracted, then reduce the deformity by cutting them. Be perfectly sure that the deformity is thoroughly reduced before you proceed further.

When I had done, upon the cadaver, the operation described above, the only doubt existing in my mind was whether the adhesions resulting from the traumatism done to the adjacent tissues would not be so strong that they could not be got rid of. I am now thoroughly convinced that these adhesions can be loosened by the proper use of electricity and manipulation to the parts. Of course it takes time for this part of the work. The result will surely compensate the surgeon for the time and trouble. At the same time, the muscle which has double work to perform should be further developed so as to be equal to its task.

If, on the other hand, the adhesions resisted all efforts of the surgeon, and still stuck the tendons to the surrounding tissues, the arch of the foot would be maintained and the position of the foot improved. And I believe the patient would be able to walk fairly comfortably without the assistance of a brace. If my fellow-practitioners will employ the principle here laid down, I believe that thousands of patients who are now wearing braces or crutches may be relieved of their deformities and also their artificial supports.

EXTIRPATION OF THE SUPERIOR MAXILLA AND THE CHEEK;

SKIN-GRAFTING FOLLOWED BY A PLASTIC OPERATION FOR THE FORMATION OF A NEW CHEEK.*

By FRANK HARTLEY, M. D.

Case I.—Mr. Mc——, aged sixty-six years, United States, farmer, married. Has been under my care since January 20, 1891, at which time he was admitted to Bellevue Hospital. His family history is negative so far as tumors and congenital defects are concerned. In 1879 he first noticed what appeared to be a wart upon his left cheek below the infra-orbital margin. This gradually increased in size in spite of active treatment by many physicians, all of whom made use of caustics to the growth. It had been almost continuously treated until January 20, 1891, when he presented himself at Bellevue Hospital with an ulceration involving the greater portion of the left cheek and superior maxilla.

January 26, 1891.—A complete extirpation of the growth was attempted. It required a complete removal of the superior maxilla and of the cheek over an area marked by the lateral border of the nose, the infra-orbital margin, the posterior border of the ramus of the inferior maxilla, and the lower border of the body of the maxilla as far as the angle of the mouth.

Skin-grafts taken from the thigh were used to cover the surface over the ramus of the inferior maxilla as far as its anterior border, and the adjoining portion of the zygomatic fossa exposed by removal of the superior maxilla. The body of the inferior maxilla, as far as the angle of the mouth, was also grafted. The recovery from this operation and the healing and union of the grafts were uneventful. The grafts took over the whole area, excepting a small area just beneath the orbital cavity. The patient remained at Bellevue Hospital two months and a half. He was then, April 6, 1892, discharged with the injunction to return for a plastic operation in a year if no return of the disease occurred. On May 11, 1892, the patient entered my service in the New York Cancer Hospital for the purpose of having the large cavity in the face closed.

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* Read before the New York Surgical Society.

May 15, 1892.—The cavity left by the former operation was circumscribed by two incisions three eighths of an inch apart, running from the angle of the mouth along the lateral border of the nose, the infra-orbital margin, the anterior border of the ramus of the jaw, and the alveolar border to the angle of the mouth. The skin between the incisions was removed to give a broad attachment to the flap which was to cover the defect. This flap was taken from the neck and, in order to attain a sufficiency, the incisions were carried nearly to the acromion process. The flap measured six by eight inches before being cut loose from the underlying tissue, and when turned upon itself, so as to have the skin take the place of the mucous membrane of the oral cavity, and to leave the raw surface external, it was just sufficient to cover the defect in the cheek without tension. The suturing of this flap was accomplished by uniting the edge of the skin which now took the place of the mucous membrane of the oral cavity to the inner edge of the furrow surrounding the original cavity, and made by the removal of a strip of tissue three eighths of an inch wide. After this was accomplished and the cavity of the mouth was closed, the outer margin of the furrow was united with the upper surface of the flap, so as to give a broad surface for union of the flap to the cheek.

The suturing was all done with catgut, excepting a few silk tension sutures. Skin-grafting was made use of to cover the surface exposed by the flap. The solution used throughout the operation was six parts of chloride of sodium in one thousand of filtered and boiled water. The union of the flap to the surrounding tissue as well as the skin-grafting was completely successful.

5th.—The flap was divided at its base and sutured to the margin of the cheek in the same manner as the rest of the flap. The pedicle was removed completely and the surface left was skin-grafted. Skin-grafting was also made use of to cover the granulating upper surface of the flap.

7th.—The grafts over the upper surface of the flap failed, owing to its poor vascularity after division of the pedicle. Those over the point where the pedicle had been attached remain healthy.

20th.—Superior surface of the flap is granulating nicely and cicatrization is advancing rapidly. Grafts over the spot where the pedicle was attached are solidly united.

This case is of interest because of the extensive removal of tissue, the successful skin-graftings over bone, and the successful plastic operation for the formation of the whole cheek.

EXTERNAL URETHROTOMY.

WITH A REPORT OF FIVE CASES IN WHICH THIS OPERATION WAS PERFORMED.

By JAMES KENNEDY, M. D.,
SAN ANTONIO, TEXAS.

There are some who hold that unless urinary fistulæ or chronic abscess exist, the indications for this operation are rare, while others (and with those I agree) favor the operation in any case of close organic stricture of the urethra situated at a depth of four inches and a half or greater, whether complicated or not by abscess or fistulæ. Of course, a stricture complicated by either of these conditions leaves us no choice of methods.

The advocates of the internal method claim that there is less risk to the patient and that the operation is more easily performed, while to many others the external method seems very much simpler and decidedly more safe.

External urethrotomy was devised for the purpose of reaching those strictures which either could not be reached safely or could not be reached at all by the internal method.

I herewith present a report of five cases in which external urethrotomy was performed. In two of the cases the combined method was employed.

Case I.—The patient was about thirty-five years of age and had contracted gonorrhœa (the last time about eighteen months previously); had treated himself, using the various nostrums found on the apothecaries' shelves, and had tried a number of "sure cures" given him by his friends, and after some months believed himself cured.

His history, however, showed that stricture and gleet had supervened.

When I first saw him he was suffering the agonies incident to a distended bladder, and prayed for immediate relief.

Catheterism had been frequently practiced by other physicians, into whose hands he had fallen previous to his having come under my care. I attempted to introduce a flexible instrument, but failed. A metallic catheter was passed with difficulty, owing to the close, firm, and resistant character of the stricture. The urine, when drawn, was of a putrid ammoniacal odor, and the latter portion consisted of pus and blood.

The stricture was so irritable that it was impossible to introduce an instrument without causing the patient great pain, and, as it was situated at a depth of about six inches, it was decided to do an external urethrotomy. The diagnosis of deep urethral stricture, complicated by chronic suppurative cystitis, was made and external urethrotomy was performed, using a Little's lithotomy staff as a guide.

The bladder was thoroughly irrigated with a moderately saturated solution of boric acid. A cannula was introduced through the wound and iodoform gauze packed around it. The patient's temperature was 99·5° F. and pulse 100 after the operation. He recovered rapidly from the anæsthetic.

Five hours later I returned and found him in coma, which I diagnosticated as uræmic, and in which he died. Apparently not a drop of urine was secreted after the operation, as everything about the wound was found perfectly dry and the bladder was entirely empty of urine.

I held a post-mortem examination, and found that chronic suppurative nephritis existed in addition to the vesical trouble which I diagnosticated. The kidneys were found to be so occupied with abscesses, containing a horribly fœtid pus, as to be but little more than broken-down masses of suppurating tissue, and apparently containing scarcely a sound shred of renal tissue.*

It is clearly evident that in this case acute suppression of the function of the kidneys resulted from the shock of the operation, owing to their extremely disabled condition. It is further evident that the renal function must have been very poorly and imperfectly performed for some time prior to the operation on account of the great destruction of kidney tissue that had occurred and the scant amount that remained capable of doing service.

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* A brief outline of this case, with a reference to the post-mortem appearances of the organs, was published in the *New York Medical Journal*, October, 1890, under the title of The Relation of Gonorrhœa to Renal Disease.

Case II.—Patient about twenty-seven years of age. History of gonorrhœa, stricture, and gleet. Stricture of long standing. Subacute cystitis present.

On examination, I found the stricture to be located about five and a half inches from the meatus. Stricture firm and resilient. Urine passed in a small stream and with difficulty. Bladder symptoms very troublesome.

External urethrotomy with a guide was performed. Considerable hæmorrhage occurred during the operation, which was due to a general oozing, as no bleeding points could be detected.

The cannula, with iodoform-gauze packing, was employed in this as in the preceding case, but, unfortunately, the patient did not allow it to remain long, and, in consequence of the withdrawal of tube and gauze, hæmorrhage into the bladder occurred and clots formed therein, which was to the patient a most distressing accident and to myself a very trying and troublesome experience.

In an hour after leaving the house I was recalled, and found him suffering an agonizing pain with an intense desire to empty his bladder, which organ I found very much distended and forming a tumor, which could not only be felt but seen rising above the pubes. I immediately introduced a cannula through the wound, but, owing to the blood having coagulated, the instrument became obstructed and no urine could pass. I then introduced a catheter *per urethram*, but with the same result. It was only after repeated introductions and withdrawals of instruments (to clear the instruments) through both channels, and my finger introduced through the wound, that I succeeded in emptying the bladder. The emptying and washing of the bladder consumed more than an hour, but it was not before the third or fourth day that I succeeded in washing out all of the clots.

After the bladder was relieved, the cannula was reinserted and the hæmorrhage controlled by packing in more of the iodoform gauze. The bladder was washed out twice daily with a solution of boric acid, and in two weeks the patient was able to return to his work. Urine was passed freely through the natural channel, and the wound healed in the usual time. The vesical symptoms were entirely relieved and the patient has entirely recovered.

Case III.—Patient about twenty-four years of age. Imperfect and thoroughly unreliable history. The strictures (there were two) were doubtless of gonorrhœal origin. From the dense character of these cicatricial formations it was evident that they had existed for some time.

On examination, it was found that the more anterior stricture was located at a depth of about three inches and a half, while the deeper one was situated at a distance of five inches and three fourths from the meatus.

The patient believed he was suffering from kidney disease, and did not suspect any trouble in his urethra. He complained of incontinence of urine, and wore rags about the part to absorb the excretion which dribbled from him almost constantly. He could not urinate freely at any time, and was never able to pass a stream larger than a very fine knitting-needle.

I was unable to pass a filiform instrument of the smallest size, even with the aid of an endoscopic tube, which almost always enables one to succeed in passing some of the closest strictures.

In this case I was obliged to do an external urethrotomy *without* a guide, in order to divide the deep stricture, while the more superficial obstruction was disposed of by means of the internal method, cutting from behind instead of in front, which I was enabled to do through the incision, and found the stricture more easy of access than through the meatus.

This patient recovered without accident, was able to sit up on the fourth day, and in two weeks returned to his work.

Case IV was that of a widower, aged forty-five years at the time he consulted me with reference to his trouble. He gave a history of traumatism that might have occasioned the stricture.

There is one fact connected with this case which, I will venture to say, distinguishes it from any one previously recorded. I have stated that when the patient first consulted me he was a widower. As soon as I had examined him and advised operation, he was very anxious that I should set a time for doing it. Having informed him that I would, if specially desired, operate on the following day at 10 a. m., he replied that the time would suit him admirably, as he intended getting married that night.

I paid but little heed to his remark, and you can well imagine my surprise when, as I walked into his apartments on the following day accompanied by my colleagues, I heard him say: "Doctor, allow me to introduce you to my wife." For a gentleman to marry at 9 p. m. of one day and be operated on for stricture of the urethra at 10 a. m. on the day following is, to say the least, a very unusual occurrence.

The stricture was a tolerably close one and very dense. The case was not one, however, that demanded urgency, as the symptoms were not of a serious nature. The stream of urine was smaller than normal when passed, and there was some vesical irritation, which was about all he complained of; but, as he was very anxious to be entirely rid of it, I advised operation.

The obstruction was found to be situated at a depth of about five inches. The operation was performed with a guide in the usual manner, and a speedy recovery occurred without accident. The patient sat up on the third day, and returned to his work on the twelfth day.

Case V was that of a patient of Dr. H. J. Trolinger, from whom I obtained the following history: Age about twenty-five years. Had had gonorrhœa a great number of times.

For more than a year he had not been able to urinate without straining violently, and suffered extremely from vesical tenesmus.

When I was called in consultation to see the patient I found that he had a very small meatus, and there was extensive erosion of the urethral membrane.

Two strictures were discovered—one at the depth of two inches and a half and the other about five inches and a half from the meatus.

I recommended to first incise the meatus and then do a double or combined urethrotomy.

The doctor very courteously invited me to do the operation, and, with the able assistance of himself and Dr. Russell Caffery, the operation was performed.

The superficial stricture was divided by means of a small blunt-pointed bistoury, after the meatus had been incised and the deep obstruction relieved by an external incision performed in the usual manner with a guide.

The patient, I am told, made a rapid and satisfactory recovery, with complete relief from his very troublesome symptoms.

In all of these cases, with the exception of Case III, there was urethritis with a more or less purulent discharge.

In Case V the urethritis seemed to be acute. In Cases I, II, and IV the inflammation was of the subacute or chronic form.

Urethral injections were used in those cases with good results.

Chloroform was the anæsthetic employed in these operations.

The rules of asepsis and antisepsis were observed as far as possible or practicable.

A double-current female catheter was used as a cannula. And this instrument, I will remark, has the advantage of allowing us to wash out the bladder with a continuous stream and need not be disconnected from the syringe until we have finished the irrigation. If it is desired that the bladder be partially or fully distended, this may be accomplished by closing the return exit with the finger.

Iodoform gauze was packed around the cannula in every case, and the gauze changed according to the requirements.

The instrument was removed on the third day, and returned either by myself or the patient, if necessary.

In Case IV there was no need for the cannula after the third day, as urine passed freely through the natural channel.

In every case instrumentation of the urethra was practiced after the second or third day, daily or on alternate days for two weeks, and once a week for two months afterward.

The bladder was washed out twice daily for the first week, and as frequently thereafter as was indicated by its condition. A double-current male catheter passed through the urethra was used after the first week for washing out the bladder in those cases where irrigation was thought necessary after that time.

The time of complete closure of the perineal wound differed in each case. In one a tiny fistula remained for more than three months.

External urethrotomy furnishes us a means of curing conditions which are not amenable to other methods, viz.:

1. Those forms of cystitis which are dependent upon the existence of a deep-seated organic stricture.
2. Abscesses and urinary fistulæ, which are among the sequelæ or accompaniments of stricture.
3. Very close and densely formed organic strictures which will not admit a guide.

Unless the obstruction in the urethral canal is quite superficial, external urethrotomy seems preferable in those cases of stricture requiring a cutting operation, especially if complicated by cystic inflammation, which is not an infrequent complication, particularly in close strictures of long standing, on account of the more perfect drainage, as well as the greater accessibility afforded by this method.

APPENDICITIS.

*OPERATION; DEATH; POST-MORTEM.**

By W. H. HODGMAN, M. D.,
SARATOGA, N. Y.

THE clear and vigorous paper on appendicitis recently read before the New York Academy of Medicine by Dr. Charles McBurney states completely the position toward which all physicians and surgeons are surely drifting. The opposition aroused, and, in some instances, the misrepresentation practiced, to cry down one of the really great advances in surgery, are simply history repeating itself. The controversy excited serves a useful purpose in that it stimulates the pioneers in this grand operation to more determined efforts in perfecting the procedure that has already had, and is destined still to have, such beneficent results in the saving of human life.

Notwithstanding the point so earnestly insisted upon by Dr. McBurney that each case has its own peculiar characteristics differing widely from those of every other, and therefore must be studied by itself with faculties sharpened by oft-repeated observation, it is to be hoped that, for the benefit of those who are not brought into almost daily contact with severe cases of this most treacherous disease, the genius of American surgeons will complete its grand work by clearly indicating when to do the "timely operation" and when to leave the case in the hands of the physician.

It seems to me that Dr. McBurney takes a long step in this direction when he tells us that a sudden accession of pain in the right iliac region, accompanied by a rise in pulse and temperature, occurring during a course of seemingly mild appendicitis, is *generally* the time in a large class of cases. A condition of severe shock following these symptoms, however, might necessitate a few hours' delay; otherwise the operation should be done at once. That waiting even for these symptoms may be, in some instances, too late, is well shown in the history of the following case—a case in which death would have ensued as certainly had no operation been done. It presents a number of features quite unique, and will, I think, be of interest as one that promised so well yet terminated so disastrously, showing apparently that an earlier operation would have saved a life, and also bringing up the matter of loin drainage, which, I believe, is insisted upon by some surgeons as routine practice, while considered by others to be entirely unnecessary.

Robert S., a Scotchman, aged forty-seven years, mechanic, was taken ill in bed March 30th. His physician found him suffering with pain in the right lower portion of the abdomen, constipation, some headache and vomiting, pulse 100, temperature 99·5° F. There was tenderness at McBurney's point and some rigidity of the abdominal muscles on the right side. He stated that he had not been feeling well for two weeks; also that four or five years previously he had been struck in that part of the abdomen while unloading some lumber from a wagon, in consequence of which he was sick for about two weeks. This was all the history obtained from him, though subsequently to his death a friend of his told the writer that within the last two years he had, on several occasions, been confined to his bed "with pain in the bowels."

The physician in attendance during his last illness, recognizing the presence of appendicitis, advised complete rest, moved his bowels, applied dry heat over the caput coli, and put him on a liquid diet, which, with sufficient morphine to relieve the pain, completed the treatment. From March 30th until April 4th his pulse did not rise above 105, nor his temperature above 101·5° F., and his vomiting ceased.

During a visit on the morning of April 4th his physician discovered a tumor about two inches from the anterior superior spine of the ilium and a little above a line from that point to the umbilicus. On the afternoon of this day the patient had a severe chill, an increase of pain in the abdomen, and a return of the vomiting. His face had a drawn and pinched look, his pulse being 130 and temperature 103·6° F. Between 9 and 10 P. M. I saw him in consultation. All the symptoms just mentioned were present, except that the pulse had fallen to 120 and the temperature to 103° F. Diagnosticating rupture of the appendix, and discovering no indications of septic peritonitis, I advised operation.

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* Read before the Second District Branch of the New York State Medical Association, and specimen exhibited, at its eighth annual meeting.

The patient, who was a bright, intelligent man, to whom the nature of his trouble had been fully explained and the possible necessity for an operation indicated, readily consented. His surroundings were about as bad as they could well be for undertaking an operation of this character, and the conditions precluded the possibility of his removal to a fitter place. The energy and perseverance of his attending physician, Dr. Swan, removed many of the obstacles, and at 11 A. M. the next day he was ready for operation. This delay of about thirteen hours seemed unfortunate, though unavoidable. As the post-mortem shows, it would probably have made no difference.

On the day of operation his appearance indicated a general septic infection, his countenance being of the ashy-gray look so characteristic of this condition. His pulse was now 110, temperature 99·5° F. The usual operation was done except that, following the more recent teaching of McBurney, the incision was carried through the outer border of the rectus muscle instead of through the aponeurosis of the oblique muscles. By way of parenthesis I will say here that although either route is not difficult, yet, after having operated both ways, I much prefer to go through the rectus muscle. In addition to giving a stronger abdominal wound, the contrast in the appearance of the tissues simplifies the dissection very materially. The peritonæum was not adherent and when opened and the wound retracted, the tumor which we had previously felt was exposed.

It proved to be composed in great part of a portion of the external layer of the great omentum, and in part, I believe, of a greatly distended tip of the appendix, all of which was much thickened by inflammatory process. Into this mass the appendix in its distal third was seen to be imbedded. The omentum was tied off in sections at a point shown in the post-mortem to be about half an inch from the transverse colon. A few mild adhesions at the outer side were separated, when the mass was found to be attached to the upper or presenting portion of the caput coli by a large and what appeared to be an old adhesion. While this was being carefully separated there was an escape of very fœtid pus from under my fingers. Having expected this, the pus was immediately taken up as it came out on small pieces of sponge previously prepared for the purpose, not a single drop escaping us.

The separation was completed, leaving attached to the gut a piece of about the size of a nickel, which adhered so firmly that it could not be removed with safety to the intestine. No fæcal concretion or other particle was found at this time or afterward. All the mass being now free, the appendix (about two thirds of which seemed perfectly healthy) was ligated with silk half an inch from the caput coli, divided, and the stump disinfected with a Paquelin cautery. The adherent piece was also lightly cauterized. The surrounding parts were examined, carefully cleaned, and a small sponge, on a holder, carried down to the fundus of the bladder, to make sure that no blood that had oozed out in separating the large adhesion had reached that point. It came out perfectly clean. A small loop of intestine was replaced and the wound carefully packed with iodoform gauze. Iodoform gauze, bichloride gauze, and absorbent cotton, all in plentiful amount, held in place by a gauze bandage, completed the dressing.

The operation and dressing consumed but a trifle over half an hour. At the conclusion of the dressing the pulse was 84; temperature not taken. A hurried examination of the specimen showed the inner surface to be gangrenous throughout its whole extent.

Before fully recovering from the ether, hiccoughing commenced and continued until about 9 P. M. As the hiccough subsided, vomiting began. The following morning his pulse was 140, temperature 98·5° F.; vomiting continued. I saw him at noon; pulse 130, temperature 98·5° F. He looked pale and pinched and complained of a feeling of constriction about the body somewhat above the level of the navel. As I suspected intestinal obstruction, it seemed advisable to examine the wound, and, though much disliking to do so, I removed the tampon. The wound and portion of the gut in sight appeared to be in perfect condition, with no constriction at that point. The removal of the tampon thus early made necessary the insertion of two retentive sutures through the skin, areolar tissue, and muscle. Fresh outer dressings were replaced.

During the afternoon stercoraceous vomiting commenced, the expression became more haggard, the pulse feebler. Learning of these continued bad symptoms at about 6 P. M., preparations were commenced to enlarge the abdominal wound, make a thorough inspection of the intestine, and remove any obstruction if found. Owing, in part, to the conditions before mentioned and in part to the difficulty in readily obtaining the required assistance, it was 9 P. M. before we reached the patient's home. His condition was then found to be so bad that no thought of operative interference could be entertained. He died an hour later.

The following evening a post-mortem was made, at which Dr. Inlay, Dr. Swan, Dr. Beers, and myself were present. The abdomen was opened by a crucial incision. No adhesions, except a few mild ones that had formed in the immediate neighborhood of the wound subsequently to the operation, were found. All tissues at and about the point of operation were clean and healthy. The intestines, somewhat distended with gas, but in no other way departing from a normal appearence, were removed inch by inch and carefully examined without finding anything whatever that resembled an obstruction.

A little below the diaphragm on the right side, in the concavity formed by the ribs, were about two ounces of pus lying free in the peritoneal cavity. This pus appeared to be of a slightly different character from that found at the time of operation, being not so fœtid, and by lamplight of a faint pinkish tinge. It may have reached the high point at which it was found when the bandage was applied, as a hip-rest was used at that time. If this is the case, then certainly drainage in the loin would not only have shown us the presence of this pus, but probably have saved our patient. As all the other abdominal organs were healthy, and consequently no other source of it could be found, the conclusion is forced upon us that the pus found post mortem escaped at the time when the chill, pain, and sudden rise of temperature occurred, thirteen hours previous to the operation; working its way over the ascending colon, it reached the point, or nearly so, at which it was found.

A careful examination of the specimen leaves no doubt in my mind that such was the case. Owing to a combination of circumstances, the specimen did not reach me for thorough examination until several days after its removal. During this time it had been subjected to some handling and dissection, and had been kept in a mild bichloride solution. The whole mass nearly fills a wide-mouthed eight-ounce jar. The appendix appears perfectly healthy in all the part left, the tip being entirely gone, so that a pocket-case probe passes entirely through it, thus constituting the perforation which formed the abscess in the omental mass. In this connection I would make the suggestion that the tip is so cleanly cut off and the remaining portion so perfectly healthy that, had a slight adhesive inflammation sealed the lumen, it might quite readily be mistaken for a perfectly healthy appendix.

This fact naturally suggests the idea of some such condition having obtained in the few found reported, wherein there has been a perityphlitic abscess without apparent involvement of the appendix vermiformis. An examination of the mass indicates very clearly that two distinct abscesses have existed therein—the one that was opened at the time of operation having a gray lining, the other and larger one, being also the one that lay highest on the colon, having a distinct red color, due to a lesser degree of necrosis.

When the mass is placed in the position in which it lay on the caput coli, it is easily seen that the two cavities were not connected. On what was its upper end and at its junction with the intestine is a thin wall of tissue that looks as if a rupture had there taken place. This is the point, I believe, from which the pus escaped and found its way to the position described.

Near the point at which the appendix was divided is what appears to be an enlarged gland which made up a portion of the mesentery of the appendix. A section through this clearly shows its glandular structure. The abscess cavity is sufficiently large to hold all the pus found. From the moment the peritonæum was open the mass was in full view.

Every step of the operation was closely followed by Dr. Swan, Dr. Inlay, Dr. Humphrey, Dr. Beers, and Mr. Gates, student, all of whom gave me efficient assistance. All the physicians named had assisted in, or had seen, operations for appendicitis either in Saratoga or in New York, and after our operation was finished each assured me that every part of it had been entirely satisfactory to him.

During the last sixteen months I have performed three operations for the removal of diseased appendices, and on the 12th of last December I had the privilege of seeing Dr. McBurney perform two operations at Roosevelt Hospital.

In the operation here recorded I followed, as closely as is possible in the ever-varying complexion of this disease, the technique there witnessed.

At the risk of being tedious, I have written a full history of this case because I believe it embodies some very important points that could not be fully appreciated in any other way. So far as I am aware, its parallel in the following particulars has not before been reported:

1. The symptoms of intestinal obstruction, coming on so soon after operation and continuing to the end, without a trace of any such condition found at the post-mortem carefully and conscientiously conducted.*

2. The escape prior to operation of about two ounces of pus into the peritoneal cavity, leaving behind no trace of such escape discoverable at the time of operation, and producing up to that time no symptoms that could not be accounted for by the conditions found at the time of operation.

3. The finding of an abscess at the point at which we are taught to look for it, emptying it, removing all diseased parts, yet leaving sufficient pus in the peritoneal cavity to destroy life. Pus that had originated at the same point escaped and left no trace.

In addition to these it illustrates very forcibly and clearly two other points that within a few years American surgeons have done so much to make clear—viz., that practically typhlitis and perityphlitis as diseases *per se* do not exist, probably all, and certainly very nearly all, having their origin in a disease of some portion of the appendix, and consequently being intraperitoneal. That all cases of appendicitis in which there is gangrene or suppurative inflammation do not "wall in" and present themselves at some favorable point where they can be treated as an ordinary abscess, but may, even in seemingly mild cases, rupture into the peritoneal cavity and rapidly prove fatal. Taking into account the case here presented, is it not possible that there may have been some patients believed to have died of intestinal obstruction in whom, instead of an actual obstruction, there existed a condition similar to this?

The writer has a distinct recollection of a case that occurred in his practice eight or ten years ago that in some essential points resembles it.

The patient, a woman, had, at intervals of about a year each, three attacks of what was then called perityphlitis. Rest in bed, dry heat over the abdomen, the free use, internally, of olive oil, with sufficient morphine to quiet pain, was the treatment. In each attack the oil produced free catharsis after it had been used for several days. She was in bed with the first two attacks ten to twelve days each time. After the third attack had lasted a few days a fresh accession of pain in the region of the caput coli, and an elevation of pulse and temperature were soon followed by symptoms of intestinal obstruction, and death two or three days thereafter. During the earlier part of the last attack I once distinctly felt a small hard mass in the right iliac region, though I have no recollection of any further examination of it. No post mortem was obtained.

TWO PRACTICAL SUGGESTIONS FOR ANALYSTS OF URINE.

By LOUIS FAUGÈRES BISHOP, M. D.

Use a proper specimen glass. Three years ago, when junior assistant at St. Luke's Hospital, I became dissatisfied with all the forms then in use, and, after unsuccessful search for one that was satisfactory, I finally designed one for use in the hospital. This has proved very satisfactory to each succeeding generation of juniors and has been adopted at other hospitals.

The "St. Luke's model" consists of a cylindrical glass resembling that commonly used for taking specific gravity, but larger and constructed with a wider foot and a lip for pouring. The bottom is slightly concave instead of the convex form that the maker naturally gives to such vessels unless warned not to.

The advantages of the cylindrical over the usual conical form are practical and important. The specific gravity can be taken without disturbing the sediment, and the bulk of the sediment can be more easily estimated.

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* Since this was written I have found this rare condition fully described in Senn's *Intestinal Surgery*, page 134, under the heading Dynamic Intestinal Obstruction caused by Suspension of Peristalsis.

Every hospital interne falls into the habit of completing his analyses, except the microscopic work, and then doing that with greater or less care as indicated by the previous tests. With the conical form of glass this is attended with serious disadvantage, as the urine must be put into another vessel to find its specific gravity. Another disadvantage of conical glasses is that casts adhere to the sides in settling.

The best practical method for estimating the quantity of sugar in urine is by the fermentation of a specimen until the sugar is entirely destroyed, and then determining how much has been disposed of.

Take two four-ounce bottles of urine; cork one tightly; into the other drop one quarter of a cake of compressed yeast (Fleischmann's). Stand in a warm place until the glucose in the latter has been destroyed as shown by Fehling's test. The number of degrees of difference in specific gravity will equal approximately the number of grains of sugar to the ounce of urine.

The specimens might be weighed and the sugar estimated by a simple arithmetical calculation, but the use of the urinometer is really only a simpler method of weighing. The degree-grain ratio expressed above is found to be nearly correct (Roberts).

I have devised the following formula which can be used in the intervals between the estimations in well-marked cases of diabetes: Divide 880 by the number of ounces of urine passed in twenty-four hours. To the result add 1,000, and subtract the sum from the specific gravity of the urine. The result will be the number of grains of sugar to the ounce of urine.

The primary number, 880, may be, for greater accuracy, altered to suit exactly individual cases as determined by experiment.

For example, suppose a patient to pass 100 ounces of a specific gravity of 1·030. $\frac{880}{100} + 1{,}000 = 1{,}008{\cdot}8$. $1{\cdot}030 - 1{,}008{\cdot}8 = 21{\cdot}2$. The patient has about 21 grains to the ounce. Now, if in this individual case the result was found to be too far from the truth, a suitable number would be substituted for 880, which, though the best coefficient for general use, yet is not so good for particular cases as one that may be determined by experiment.

24 East Forty-first Street.

Australian Snake-bite Treatment.—"The natives are said to employ a very simple remedy in the treatment of snake-bites which is uniformly effective. The process is as follows: A piece of human-hair string, which is made up as strong and as fine as the best whip-cord, is tied as tightly as possible three or four inches above the region of the bite; then a circle round the bite is cut with a sharp stone knife about an eighth of an inch deep and a quarter of an inch from the two fang punctures. When this is done the native slits the largest vein below the bite so as to let as much blood as possible out of the limb below the string, and keeps a stream of water running on the limb just above the affected part, rubbing the limb down all the time as hard as possible. This rubbing is kept up for about twenty minutes, till every drop of blood seems to be got out of the wounded portion. When this is accomplished, the slit vein is twitched up with a piece of sharp, thin wood, some dirt is dabbed on the wound, and the string undone."—*Druggists' Circular and Chemical Gazette.*

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BACTERIOLOGY AND THE PREVENTION OF CHOLERA.

Deputy Surgeon-General George M. Sternberg, of the army, took part in a discussion on cholera and its prevention at a special meeting of the Medical Society of the County of Kings, held on September 6th. He chose for his subject The Bacteriology of the Disease and the Methods of Disinfection now most valued. Dr. Sternberg is fully persuaded as to the ætiological force of the "spirillum of Asiatic cholera," as the experts now term the comma bacillus of Koch. He fully accepts the findings of Koch and other observers, which deny that this spirillum has been discovered in any other disease except cholera. He himself has made diligent search for this micro-organism in yellow fever and other conditions, but without success. As to the biological characteristics of this spirilum, Dr. Sternberg holds with Kitasato that desiccation will ordinarily kill it in a few hours, certainly within twenty-four hours, if the stratum is a thin one; but that, if the film is thick, the spirilla may survive as long as thirteen days.

As regards disinfectants, the author emphasizes the importance of an agent that is seldom mentioned in the routine circulars of our health officials, namely, recently slaked lime. In the last Italian epidemic lime, in this and other forms, was very lavishly used. And now recent experiments made in Germany show that this agent stands in the front rank for some preventive uses. The spirillum of cholera and various other organisms found in the dejecta of patients are destroyed by a freshly prepared milk of lime, and recently slaked lime thrown into cesspools and vaults has come to be considered one of the most reliable means of disinfection of masses of excreta. Chlorinated lime is another important agent that is too little used. The only use for sulphate of iron, according to the author, is as a deodorant, and the following suggestion is made for its utilization in hospitals: A boiling-hot solution may be kept in a reservoir of some kind and made to serve as an excellent cleansing application for bed-pans and the like. The hot water will do the disinfecting, and the iron the deodorizing.

In closing his remarks Dr. Sternberg briefly referred to the importance of a pure water-supply to cities in times of impending epidemic. He said: "I am one of those who believe that, if a certain number of cases was scattered in nine or ten different parts of the city, the disease could be stopped even then. I believe it would not extend in these cities, because I have a good deal of confidence in our water-supply. You all know that when the cholera prevailed in Naples, as a very severe epidemic, refugees went to Rome and fell sick and died. Rome is dirty enough, but she had a good water-supply, and the disease did not spread, there being no cases except those of the refugees. We hear that refugees from Hamburg have been taken sick in Berlin, but there is no local epidemic there so far, and I believe the Berlin people will be able to keep it away, and we can do the same thing." This appeared in a special issue of the *Brooklyn Medical Journal*, dated September 10, 1892.

MORTON'S PAINFUL AFFECTION OF THE FOOT.

WE remember to have seen not long since a statement by a Washington correspondent that there was a growing prominence given in professional circles to a certain painful condition of the foot called "Morton's toe," and that it had received that name because one of the sufferers from the disease was a gentleman holding very high office at the capital. The writer further stated that the most common cause of the trouble was the wearing of narrow-soled boots or shoes.

However correct the writer may have been in his ætiological statement, he went wide of the mark in the matter of nomenclature, as all the older generation of surgeons well know. Dr. Thomas B. Morton, of Philadelphia, described in the *American Journal of the Medical Sciences*, about twenty years ago, the affection of the foot that has since that time borne his name. He classified a group of cases that had come under his notice, beginning in 1870, as a peculiar and painful disorder pertaining to the metatarso-phalangeal joint of the fourth toe. He had found that it was more frequent among women than among men, that it was infrequent among working people, and that it was unknown among soldiers. This last statement was made on the authority of Surgeon Billings. Mild forms of the trouble existed which were quite well known to shoe dealers; in these cases the pain was not unbearable. The severer forms, however, were attended with agonizing pain, such as could best be explained by a local neuritis due to bruising of one or more branches of the external phalangeal nerve distributed between the toes. This bruising of the nerve was most frequently brought about by lateral compression from badly fitted shoes, the head of the fifth bone being the anatomically weak point of the fore part of the foot.

A French writer, Dr. Auguste Pollosson, in 1889, called attention to a pedal affection, termed by him "anterior metatarsalgia," that had many points in common with Morton's affection, but it was held to be due to a weakening of the plantar arch, together with compression of the nerve or nerves distributed along each side of the fifth and sixth metatarsals. The symptomatology, the neuralgic history, and the aggravation of acute into chronic manifestations were practically identical, and the means of relief and cure in both series of cases depended upon the adoption of a foot-covering that would discontinue lateral compression along the line of the metatarso-phalangeal articulation.

In the *Lancet* for March 19th Dr. L. G. Guthrie narrated his personal sufferings and his release from "a form of painful toe" brought on by standing or walking in tightly fitting boots. The removal of the boot was a means of lessening the pain, provided he at the same time gently pressed along the line of the painful joints. He could recognize that this act caused a reduction of a subluxation, a sharp twinge of pain accompanying the passage of the head of the metatarsal bone back into its normal position. He was especially liable to attacks of pain on hot, damp days, after walking for any length of time. He had learned to reduce the dislocation without taking off the boot, by treading heavily on the toe of the affected foot with the heel of the other and forcibly drawing the former backward within the boot, at the same time elevating the toes against the upper leather. Both the dislocation and its reduction seemed to be accompanied with a distinct "click." This manœuvre had become more and more frequently necessary until the patient seriously contemplated resection of the joint. But meanwhile the suggestion had been made that he should have a boot made that would at all times be absolutely loose across the toes, and, like Mark Twain's hero, who, after being twenty years in confinement, thought he would try his cell door and immediately walked out, he was freed, at once and for all, from the painful attacks that had formerly made life a burden.

Dr. Guthrie has found that some patients are loath to admit that the tightness of their shoes can be the true cause of their trouble; they prefer to attribute it to gout or rheumatism, "for to the non-professional public pain in the toe means gout, and pain elsewhere in the limb means rheumatism." Not only do the paroxysms of pain strongly resemble those of gout, but it is quite probable that the traumatism of tight shoes may in some instances account for the selection of the foot as the primary seat of true gout.

It should be remembered that a shoe that may be "comfortable" when first put on, may not be sufficiently roomy a little while afterward, when the painful joints have become congested and sensitive from walking or prolonged standing. The pain may come on suddenly while the person is walking, and in one instance of which the present writer has personal knowledge the victim may be compelled to stand quite still for a short time, otherwise his painful foot would not support him further; he feels as if he would fall down if he took another step. At times this pain extends to and above the ankle.

Dr. Guthrie mentions the case of a car-conductor who referred the pain to the head of the third metatarsal. This pain could be alleviated by upward pressure with the finger at the site of pain. This man was treated by means of a very broad-soled shoe, slightly convex on the upper surface of the sole, so as to support the foot at the point of weakness; with this treatment the man was enabled to continue at his occupation comfortably.

MINOR PARAGRAPHS.

THE NEW YORK NEUROLOGICAL SOCIETY.

THE first meeting of the New York Neurological Society this season was held last Tuesday evening. Dr. Terriberry presented an interesting case of a man, aged about fifty, who had gradually, during a year or more, become the subject of a rigidity of the right arm, with tremor and contracture of the fingers. There was some slight peculiarity of the voice, together with a trifling over-excitability of all the deep reflexes, but there were no other significant symptoms. The discussion left it undecided whether the case was one of paralysis agitans or of very restricted multiple sclerosis. Dr. Græme Hammond read the history of two cases of slow and progressive atrophic palsy, one of which seemed to be a chronic poliomyelitis, and the other a progressive muscular atrophy. He also showed microscopic sections of the spinal cords. Dr. Frederick Peterson reported three cases of acute mania due to the inhalation of bisulphide of carbon. The patients were young men, operatives in a rubber factory near New York, and all three recovered. These are the first cases of the kind, we believe, that have ever been reported. A discussion then took place upon the surgical treatment of trigeminal neuralgia which will undoubtedly stimulate physicians to resort to operative treatment more frequently than they do now in such cases. The number of cases collectively referred to in the discussion was fifteen, in nine of which a thorough exsection of the nerve had resulted in radical cure. In six the operation had failed to produce relief. A successful issue in sixty per cent. of cases of trigeminal neuralgia is certainly a remarkable showing as compared with the percentages of older statistics.

THE BOT-FLY OF MAN.

A WRITER in *Insect Life* for September states that in Honduras and other Central American countries there is a fly that deposits its ova in the skin of human beings. The naked Indians have a few, but the whites, who wear shirts, have ten times as many. Mr. David Logan, now of Massachusetts, passed about twenty years of his life in tropical forests hunting for mahogany, and has had at least a hundred of these parasites in different parts of his body at the same time. On one occasion he had eighteen of the maggots squeezed out of his back. The back and shoulders are especially subject to the attacks, although they are not limited to those parts. Mr. Logan was once attacked in the upper lip. The first evidence of the presence of the larva in the skin is the appearance of a small furuncle, not painful, but giving the victim a sensation of uneasiness. Close inspection shows that there is a minute orifice in the middle of the swelling. When first detected, the larva is of about the size of a pinhead. If not dislodged for a period of five or six weeks, the grub will attain to the length of an inch. The treatment employed by the natives is to cover the infested parts with a piece of tobacco leaf, just over the perforation in the integument, and soon afterward the maggot can be forced out. It is probable that the species concerned is the *Dermatobia noxialis*, commonly known to Spanish Americans as *ver macaque*.

THE TREATMENT OF EXPERIMENTAL TUBERCULOSIS BY VARIOUS PRODUCTS OF THE TUBERCLE BACILLUS.

IN an interesting paper in the *Medical News* for September 3d, Dr. Edward L. Trudeau presents the following conclusions regarding the therapeutic value of various products of the tubercle bacillus in the treatment of experimental tuberculosis. This disease was not cured in the guinea-pig by Koch's tuberculin, although the specific influence of the latter on the primary lesions is indisputable. Hunter's modification CB contains less of the remedial principle than, and is quite as dangerous as, tuberculin, while his modification B is as efficacious as tuberculin and free from its dangers. Solutions obtained from well-washed tubercle bacilli by a process described in the paper have, when extracted with 50-per-cent. glycerin and water, an injurious effect; when treated with hot alcohol they have a doubtful and at best feeble remedial influence over experimental tuberculosis, as they produce suppuration and serious constitutional impairment that may result in organic disease and death. Experimental tuberculosis in a rabbit's eye can be cured by injections of the filtered culture medium in which tubercle bacilli have developed, but from which they have been removed by filtration. This fluid apparently contains the elements that bring about reaction and cure in tuberculous tissue, although the permanency of the cure has not been established.

THE UNERRING DIAGNOSTICIAN.

FROM the *Medical Press and Circular* we learn a medico-literary secret of more than ordinary interest. Under the heading of Sherlock Holmes the writer refers to a series of clever detective stories that have appeared during the past year in a monthly periodical. Throughout these narratives a very remarkable figure stands out—a man with preternatural powers of criminal diagnosis, a man who argues successfully from the smallest premises, who never makes a mistake. The author of these stories, Dr. Conan Doyle, has confessed in the last number of the *Strand* magazine that he has taken his old teacher, Dr. Joseph Bell, as his prototype. Dr. Bell, the surgical lecturer and editor of the *Edinburgh Medical Journal*, has his own fame throughout his town for rapid diagnosis and acute observation, and is accustomed to impress upon his students the value of comprehensive study and broad views.

THE TREATMENT OF NERVOUS DISEASE BY MECHANICAL VIBRATIONS.

THE Paris correspondent of the *British Medical Journal* states that M. Charcot, having observed that patients afflicted with paralysis agitans were greatly relieved by taking long journeys on the railway or by driving, has had a mechanical arm-chair constructed that gives the same motion as a railway carriage when the train is running. This *trépidant* arm-chair is used for treating patients suffering from paralysis agitans, and after passing a short time in the chair the patients sleep peacefully, the trembling disappears, and the stiffness in their movements ceases. Gilles de la Tourette has invented a vibrating helmet that transmits and localizes vibrations, and it has been found very useful in cases of insomnia.

A DIPHTHERIA EPIDEMIC CAUSED BY ICE.

THE Washington newspapers report the singular origin of an outbreak of thirty-two cases of diphtheria, of which fifteen proved fatal, that occurred in a small locality in that city. The body of a child that had died of diphtheria was packed in ice for two days, and when the body was transferred to the coffin the undertaker threw the ice on the ground outside his shop. Three children were seen eating the ice, and in eight days they presented acute symptoms of diphtheria and died in a few hours. In all, thirty-two cases of the disease were ascribed to the deposit of the ice on the ground.

TYPHOID FEVER AND ICE-CREAM.

THAT typhoid fever may be caused by infected ice is a fact well known to our readers. Now ice-cream is added to the list of the carriers of the typhoid bacillus. The *Lancet* for September 10th states that Dr. G. Turner has informed the London County Council that he has traced an outbreak of enteric fever to the distribution of infected ice-cream by Italian street vendors.

ENGLISH CHOLERAPHOBISTS.

The Islipites and Babylonians of recent unsavory notoriety are not the only fractious cowards in the world, for the *Lancet* states that the inhabitants of Monk-Wearmouth are up in arms against the proposition to erect a wooden cholera hospital in Sunderland, though their opposition is based on the desire to have the hospital a floating one.

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending October 4, 1892:

DISEASES.	Week ending Sept. 27.		Week ending Oct. 4.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	0	0	0	0
Typhoid fever	54	23	58	9
Scarlet fever	58	9	25	3
Cerebro-spinal meningitis	0	0	1	4
Measles	24	2	26	5
Diphtheria	46	22	64	22
Small-pox	2	2	9	0
Cholera	0	1	0	0

The New York Academy of Medicine.—The special order for the meeting of Thursday evening, the 6th inst., was a paper on Otitic Brain Disease; its Varieties, Diagnosis, and Treatment, by Dr. Herman Knapp.

At the next meeting of the Section in Genito-urinary Surgery, on Friday evening, the 13th inst., there is to be a discussion on Blood in the Urine—how to Discover its Source and how to Treat it, to be opened by Dr. L. Bolton Bangs.

At the next meeting of the Section in Ophthalmology and Otology, on Monday evening, the 17th inst., Dr. G. W. Caldwell is to read a paper on Diseases of the Pneumatic Sinuses of the Nose and their Relation to certain Affections of the Eye.

The Society of Medical Jurisprudence.—At the next meeting, on Monday evening, the 10th inst., Mr. William B. Hornblower is to read a paper entitled Some of the Legal Aspects of our Quarantine System.

The American Orthopædic Association.—At the recent meeting the following officers were elected for the ensuing year: President, Dr. A. J. Steele, of St. Louis; vice-presidents, Dr. Samuel Ketch, of New York, and Dr. Arthur J. Gillette, of St. Paul; treasurer, Dr. A. B. Judson, of New York; secretary, Dr. John Ridlon, of Chicago.

The New York Bacteriological Institute.—The corner-stone of a new building for this institution, in West Ninety-seventh Street, was laid on Tuesday of this week. The institute is under Dr. Paul Gibier's direction.

The Circle of Willis.—A medical society known by this anatomical name opened new quarters in East Fifty-sixth Street on Thursday evening of this week, and gave a reception on the occasion.

Osteoclasis.—Mr. Nicholas Grattan, of Cork, Ireland, opened Dr. Lewis A. Sayre's clinic at the Bellevue Hospital Medical College on Wednesday, September 28th, with a clinical lecture on osteoclasis, and demonstrated the use of his osteoclast.

Changes of Address.—Dr. J. B. Bogart, to No. 423 Washington Avenue, Brooklyn; Dr. Dillon Brown, to No. 40 East Fifty-seventh Street; Dr. James T. Eskridge, to the Equitable Building (rooms 202, 203, and 204), Seventeenth and Stout Streets, Denver, Colorado; Dr. Maurice J. Lewi, to No. 100 East Fifty-eighth Street; Dr. E. L'H. McGinnis, to No. 60 West Thirty-eighth Street.

Naval Intelligence.—*Official List of Changes in the Medical Corps of the United States Navy for the three weeks ending October 1, 1892:*

Hibbett, C. T., Passed Assistant Surgeon. Detached from Receiving-ship Franklin and to wait orders.

Harvey, H. P., Surgeon. Detached from the St. Louis and granted six months' sick leave.

Harris, H. N. T., Passed Assistant Surgeon. Detached from the Navy Yard, League Island, and ordered to the Receiving-ship St Louis.

Stokes, C. F., Passed Assistant Surgeon. Ordered to the Naval Hospital at Yokohoma, Japan.

Russell, A. C. H., Passed Assistant Surgeon. Detached from the Naval Hospital, Yokohoma, Japan, and ordered to return home.

Stone, Eugene P., Passed Assistant Surgeon. Detached from the Pinta and granted two months' leave.

Atlee, Louis W., Passed Assistant Surgeon. Detached from the Independence and ordered to the Pinta.

Ogden, F. N., Passed Assistant Surgeon. Detached from duty in connection with the Intercontinental Railway Commission and ordered to the Independence.

Martin, William, Surgeon. Detached from the Thetis.

Rush, Charles N., Passed Assistant Surgeon. Detached from the Navy Yard, New York, and granted six months' sick leave.

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from September 25 to October 1, 1892:*

Mearns, Edgar A., Captain and Assistant Surgeon, is relieved from further duty with the commission appointed for the location and marking of the boundary between Mexico and the United States, and will proceed without delay from El Paso, Texas, to Fort Clark, Texas, and report in person for duty to the commanding officer of that post.

White, Robert H., Major and Surgeon, is granted leave of absence for two months, to take effect during October, 1892.

Marine-Hospital Service.—*Official List of the Changes of Stations and Duties of Medical Officers of the United States Marine-Hospital Service for the five weeks ending September 24, 1892:*

Hutton, W. H. H., Surgeon. To proceed to Cape Charles Quarantine for special duty. August 27, 1892. To proceed to Sandy Hook, N. J., for special duty. September 10, 1892. Relieved September 16, 1892.

Hamilton, John B., Surgeon. To report in Washington, D. C., for special temporary duty. September 2, 1892.

Sawtelle, H. W., Surgeon. Detailed for special duty as quarantine inspector, Canadian frontier. September 5, 1892. To proceed to Sandy Hook, N. J., for special duty. September 16, 1892.

Stoner, G. W., Surgeon. Detailed for special duty as quarantine inspector, Michigan ports. September 3, 1892.

Mead, F. W., Surgeon. To proceed to Baltimore, Md., on special duty. September 24, 1892.

Banks, C. E., Passed Assistant Surgeon. To proceed to Washington, D. C., for special duty. August 26, 1892. To rejoin station, September 8, 1892. To proceed to Washington, D. C., for special duty. September 22, 1892.

Devan, S. C., Passed Assistant Surgeon. To proceed to Delaware Breakwater Quarantine for special duty. August 28, 1892.

Kalloch, P. C., Passed Assistant Surgeon. To proceed to Portland, Me., for temporary duty. August 26, 1892. Detailed for special duty as quarantine inspector, Maine ports. September 8, 1892. To proceed to Washington, D. C., for special duty. September 15, 1892. To proceed to Portland, Me., for temporary duty. September 22, 1892.

Wasdin, Eugene, Passed Assistant Surgeon. To proceed to Sandy Hook, N. J., for special duty. September 13, 1892.

White, J. H., Passed Assistant Surgeon. To proceed to Way Cross, Ga., for special duty. September 19, 1892.

Kinyoun, J. J., Passed Assistant Surgeon. To proceed to Baltimore, Md., on special duty. August 27, 1892. To proceed to Philadelphia, Pa., on special duty. September, 1892. To proceed to New York on special duty. September 21, 1892.

Cobb, J. O., Passed Assistant Surgeon. To proceed to Sandy Hook, N. J., for special duty. September 19, 1892.

Stoner, J. B., Passed Assistant Surgeon. To proceed to Sandy Hook, N. J., for special duty. September 13, 1892.

Wertenbaker, C. P., Passed Assistant Surgeon. To rejoin station (Chicago). August 28, 1892.

Perry, J. C., Assistant Surgeon. To proceed to Norfolk, Va., for temporary duty. August 27, 1892. To proceed to Cape Charles Quarantine for special duty. September 8, 1892.

Stimpson, W. G., Assistant Surgeon. To proceed to Delaware Breakwater Quarantine for special duty. September 2, 1892.

Rosenau, M. J., Assistant Surgeon. To proceed to Cape Charles Quarantine for special duty. September 10, 1892.

Cofer, L. E., Assistant Surgeon. Granted leave of absence for sixty days on account of sickness. September 2, 1892.

Stewart, W. J. S., Assistant Surgeon. To proceed to Charleston, S. C., for temporary duty. August 26, 1892. To rejoin station (New York). September 2, 1892.

Strayer, Edgar, Assistant Surgeon. Assigned to temporary duty at Boston, Mass. September 6, 1892.

Promotions.

Geddings, H. D. Commissioned as Passed Assistant Surgeon. September 2, 1892.

Wertenbaker, C. P. Commissioned as Passed Assistant Surgeon. September 2, 1892.

Appointment.

Strayer, Edgar, M. D., of Pennsylvania. Commissioned as Assistant Surgeon. September 2, 1892.

Society Meetings for the Coming Week:

Monday, *October 10th:* New York Academy of Medicine (Section in General Surgery); Lenox Medical and Surgical Society (private); New York Ophthalmological Society (private); New York Medico-historical Society (private); New York Academy of Sciences (Section in Chemistry and Technology); Boston Society for Medical Improvement; Gynæcological Society of Boston; Burlington, Vt., Medical and Surgical Club; Norwalk, Conn., Medical Society (private); Baltimore Medical Association.

Tuesday, *October 11th:* New York Medical Union (private); Kings County Medical Association; Medical Societies of the Counties of Albany (annual), Chenango (tri-annual), Greene (semi-annual—Cairo), Jefferson (quarterly—Watertown), Oneida (quarterly—Utica), Ontario (quarterly), Rensselaer, Schoharie (semi-annual), Tioga (quarterly—Oswego), and Wayne (semi-annual), N. Y.; Newark, N. J., and Trenton (private), N. J., Medical Associations; Bergen, N. J., and Cumberland (semi-annual), N. J., County Medical Societies; Litchfield, Conn. (annual), County Medical Society; Northwestern Medical Society of Philadelphia; Baltimore Gynæcological and Obstetrical Society.

Wednesday, *October 12th:* Mississippi Valley Medical Association (first day—Cincinnati); Vermont State Medical Society (annual—Montpelier); New York Surgical Society; New York Pathological Society; American Microscopical Society of the City of New York; Medical Society of the County of Allegany (quarterly), N. Y.; Tri-States Medical Association (Port Jervis, N. Y.); Pittsfield, Mass., Medical Association (private); Franklin, Mass. (quarterly—Greenfield), Hampshire, Mass. (quarterly—Northampton), Middlesex, Mass., South (Cambridge), and Plymouth, Mass., District Medical Societies; Philadelphia County Medical Society; Kansas City Ophthalmological and Otological Society.

Thursday, *October 13th:* Mississippi Valley Medical Association (second day); New York Academy of Medicine (Section in Genito-urinary Surgery); Society of Medical Jurisprudence and State Medicine; New York Laryngological Society; Brooklyn Pathological Society; Medical Society of the County of Cayuga; South Boston, Mass., Medical Club (private); Pathological Society of Philadelphia.

Friday, *October 14th:* Mississippi Valley Medical Association (third day); New York Academy of Medicine (Section in Neurology); Yorkville Medical Association (private); German Medical Society of Brooklyn; Medical Society of the Town of Saugerties (anniversary).

Saturday, *October 15th:* Clinical Society of the New York Post-graduate Medical School and Hospital.

Book Notices.

A System of Practical Therapeutics. Edited by Hobart Amory Hare, M. D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Assisted by Walter Chrystie, M. D., formerly Instructor in Physical Diagnosis in the University of Pennsylvania. Vol. III. Diseases of the Skin—Diseases of the Nervous System—Diseases of the Genito-urinary Apparatus—Diseases of the Eye—Diseases of the Ear. With Illustrations. Philadelphia: Lea Brothers & Co., 1892. Pp. 11–17 to 1352.

The third and final volume of this elaborate work appears with a promptness that reflects credit on both the editor and the contributors. Under the head of diseases of the skin, Dr. H. Radcliffe Crocker has a chapter on disorders of secretion and new growths that is concise and will prove of value to the general practitioner who is called upon to treat many of the diseases therein considered. Dr. W. A. Hardaway is the author of the chapter on inflammations of the skin, and discusses his subject in his usual thorough manner. Hypertrophies and atrophies of the skin are treated of by Dr. James Nevins Hyde in a satisfactory manner. Dr. Milton B. Hartzell has written a brief chapter on the neuroses and parasites of the skin. Dr. Edward N. Brush's paper on the hospital treatment of the insane justly condemns the position that is taken in too many parts of our country regarding these unfortunates. Recently we have reported the condemnation of our local charitable asylums, and they are far better than many similar institutions elsewhere. The statements made regarding the things that are best in the hospital treatment of the insane will serve as a standard for judging of how closely local institutions are attaining a high position in this matter. The important topic of the medical treatment of insanity is considered by Dr. H. M. Bannister, who begins with a brief review of the desirability of home or asylum treatment. We are surprised to note the omission of any reference to travel as a resource in treating the insane. There are now incarcerated in private asylums many patients whose financial condition could easily afford the expense of a skillful physician, an attendant, and the cost of traveling, and whose mental state would be at least benefited by a change from the dull, unvarying monotony of asylum life. The writer's general methods for the medical treatment of mental disorders are well chosen.

Dr. B. Sachs writes the chapter on chorea, and, while we agree with him regarding the advisability of rest in the treatment of this disease, we believe that half a day in bed is a strong dose for mild cases. Sufficient stress is placed on the hydriatic treatment, and the drugs recommended are those usually in vogue, though he emphasizes the results of his wide experience in the statement that "chorea is treated best not by drugs, but by rest and nutritious food."

Dr. J. Chalmers Da Costa has written an excellent paper on epilepsy and tetanus, in which he reviews briefly the varied procedures that have been employed to cure the former disease. He urges wise care in the education of neurasthenic children tending to create in them habits of self-control. He agrees with Sachs that many cases of epilepsy are due to injury, and urges that when in doubt regarding injury to the skull it is safest to trephine. Under the head of medical treatment he reviews the drugs that are at present used in this disease, and the surgical treatment mentioned is based upon Keen's experience.

Dr. M. Allen Starr has written the chapter on locomotor ataxia, acute infantile paralysis, myelitis, and amyotrophic lateral paralysis. Regarding the first disease, the statement that the "changes in the connective tissue and nerve-elements of the spinal cord are permanent in character, and hence complete recovery in any stage is impossible," seems rather dogmatic in the assumption that discoveries in the future regarding regeneration, or limitation of degeneration, of nervous tissue have been anticipated. The author frankly states that in the majority of cases it is impossible, with our present knowledge, to arrest the progress of the disease, and apparently lays the greatest stress on general hygienic measures, regarding medicinal treatment as something in the nature of a placebo. The remarks on acute infantile spinal paralysis are made in a more hopeful vein; and in the section on myelitis we are glad to see stress laid on the constant necessity of daily evacuations of the rectum and bladder, with aseptic treatment of the latter.

Dr. C. K. Mills has written an interesting chapter on apoplexy, brain and spinal tumors, cerebritis, and neuritis.

Dr. L. C. Gray is the author of the chapter on the disorders of sleep.

Dr. Wharton Sinkler's chapter on headaches and neuralgia will be serviceable to many readers of the volume. The chapter on nervous disorders and paralyses from excessive use of the parts affected, vertigo, tremor, and lead poisoning is by Dr. C. E. Riggs. Dr. Joseph Ransohoff has written the chapter on cerebral concussion and shock. Dr. T. D. Crothers is the author of the chapter on morbid habits. Localized spasms, localized palsies, and facial hemiatrophy are considered by Dr. F. X. Dercum.

The chapter on nephritis, pyelitis, phosphaturia, chyluria, albuminuria, lithuria, oxaluria, and diabetes insipidus is by Dr. A. H. Smith, who has presented the results of his wide experience in treating these disorders.

Dr. J. William White is the author of the chapter on gonorrhœa and its complications, stricture, cystitis, prostatic hypertrophy, cystic atony, and calculus, and he has written an excellent epitome of the treatment of these disorders.

Dr. Edward Martin has written the chapter on diseases of the prepuce, glans penis, and testicles. We do not think that surgeons or the profession generally accept the doctrine that "masturbation is not more injurious than sexual intercourse, provided each is practiced to the same extent."

Dr. T. J. Watkins is the author of the chapter on non-venereal diseases of the vulva and vagina, and briefly reviews the treatment for these various disorders and gives illustrations of the surgical technique.

The prefatory remarks on dress, in the excellent chapter on diseases of the uterus, by Dr. R. L. Dickinson, are illustrated by designs that graphically show the influence of clothing in causing uterine disorders.

Dr. Hunter Robb recommends an almost exclusively operative treatment for amenorrhœa, dysmenorrhœa, menorrhagia, and sterility; a statement that is necessarily true of Dr. H. A. Kelly's chapter on diseases of the broad ligaments, tubes, and ovaries. Dr. Barton Cooke Hirst has written a readable chapter on the diseases of pregnancy and parturition.

Dr. W. F. Mittendorf is the author of the chapter on the treatment of the eye and its disorders; Dr. G. E. de Schweinitz, of that on diseases of the conjunctiva, sclera, and cornea; Dr. C. J. Kipp, of that on diseases of the iris and ciliary body; Dr. S. C. Ayres, of that on diseases of the optic nerve, retina, chorioid, and vitreous, on amblyopia, and on amaurosis; Dr. Swan M. Burnett, of that on diseases of the lens and glaucoma; Dr. H. Gradle, of that on diseases of the orbit, lacrymal apparatus, and eyelids; Dr. Lucien Howe, of that on diseases of the ocular muscles; Dr. Edward Jackson, of that on optical therapeutics; and Dr. F. Buller, of that on injuries of the eye and its appendages.

Dr. B. A. Randall has written the chapter on diseases of the external ear and tympanic membrane; Dr. Robert Barclay, that on acute diseases of the middle ear; and Dr. Samuel Sexton, that on chronic purulent disease of the middle ear.

The three volumes constitute a work that can not fail to be helpful to many, especially those in country practice who are necessarily "all-round" specialists, and who must treat a disease of the throat as well as one of the uterus, or a disease of the skin as often as one of the nervous system. In these pages we have found not only the more recent but the older methods of treatment, and one wishing to refresh his memory on a subject can do so in a short time.

Temperament, Disease, and Health. By French Ensor Chadwick, Commander, U. S. N. New York and London: G. P. Putnam's Sons, 1892. Pp. vi–85.

At various times we have urged the desirability of every professional man having some side issue, so to speak, to which he should resort for diversion when his every day duties were completed; and to some duplicate whist, billiards, or a few hours at a *café chantant* or theatre, will prove as restful as the etching of a plate or the composition of a rondeau or ballad to another. It is, we presume, from this standpoint that the author of this hygienic skit is to be commended. Commander Chadwick is one of the better known line officers of the navy, and his recent billet as naval attaché at the Court of Saint James's has probably impressed him with the appalling indifference, not to say ignorance, that many otherwise intelligent creatures exhibit regarding their "waste in life." Parenthetically we would state that his previous experience as a member of the ward-room mess had been sufficient to attract his attention to the subject, if his mind was so inclined.

He has published this essay to put forward two ideas: First, that a specific rate of change is associated with temperament; second, that a failure to keep up that rate is the primal cause of organic disease. The basis of the difference in temperament, which is "the summation of physical and mental peculiarities," it is suggested, is largely dependent upon the rate of molecular change in the physique. The color of the eyes is considered to be an index of temperament. The author builds up this hypothesis: We change (tissue metamorphosis, regenerative and consumptive). This change must be under a law which, for any given condition, would certainly seem to involve a specific rate as mentioned; this rate must be kept up or disease will ensue from a failure to throw off with normal rapidity the particles which have lived, done their duty, and died. That organic disease is a failure in rate of change will hardly be accepted by pathologists or clinicians.

We can not say that the author has logically proved his hypotheses. He has certainly read a great deal about bacteria, and there are quite a number of pages devoted to quotations from Fränkel's and Woodhead's works on bacteriology. Health may be kept, he believes, by the use of a sponge bath in the morning and a complete change of clothing before dinner, with at least a washing of the feet, the clothing taken off being placed in the air and light. We believe that this daily procedure would greatly enhance the health of many, and, as the writer's rank in the navy gives him, on sea duty, authority over a number of men, he could see to its application in preserving the health of his crew; and, as a possible future member of boards of construction, he could insist on many provisions in the berth-deck that the medical officers of the navy have vainly endeavored to have introduced for years past.

Leprosy. By George Thin, M. D. London: Percival & Co., 1891. Pp. 280.

The author's object in this work is to give such an account of the pathology of leprosy as will meet the requirements of physicians in making a diagnosis, and at the same time furnish them with something more than the usually meager details of their text-books. The standard authorities, such as Danielssen and Boeck, Hiller, Vandyke Carter, Leloir, and others, are not always at the physician's disposition, and it is from these authors and from the reports made by physicians residing in the countries in which leprosy is indigenous that Thin has derived his data. His historical review is very conscientiously made, and the various diseases formerly included under the term leprosy are distinguished.

Leprosy seems to have existed in Egypt and India more than fifteen hundred years before the Christian era, and was very prevalent all over Europe from the second to the seventh centuries, having been introduced into Italy about the time of Christ. It had considerably diminished in the fourteenth century.

At present it exists only to a very inconsiderable extent in Europe, while in the Orient it seems as prevalent as ever. Leprosy was apparently unknown in America before the arrival of the negroes from the west coast of Africa. The origin of leprosy in the islands of the Pacific belongs to contemporaneous history. The number of lepers is constantly increasing in Louisiana, Colombia, British Guiana, Trinidad, etc.

The nature of the type, whether tubercular or anæsthetic, seems to depend upon the idiosyncrasy of the individual affected and the greater or lesser resistance of the various tissues. As a rule, the two types remain distinct, but cases of a mixed form are known in which one or the other variant is more or less predominating. From statistics it would seem that nerve leprosy is commoner than tubercular leprosy in hot countries, while the disease seems to be severer when it attacks persons living in cold regions.

The bacillus of leprosy was discovered by Hansen in 1874, and there is every evidence that its habitat is the cell, out of which it can not probably live or multiply.

The nature of the changes produced is such as would be determined by the elective nature of the bacillus for certain organs, skin, mucous membranes, and nerves, and by the destruction caused by the elimination of specific poison from the bacillus in the process of its growth. There is every reason to suppose leprosy to be contagious, as in many countries localized infections can be traced to their origin. On the other hand, many undisputed instances have existed where long contact with infected persons has taken place with immunity.

It is possible that an abrasion of the tissues is necessary to insure infection, as in the case where a whole family became leprous subsequently to an attack of the itch.

Inoculation experiments have been all negative with possibly an exception in favor of Keanu, of Honolulu (1884), and of a rabbit inoculated by Melcher and Ortmann (1885).

Yellow Fever. A Monograph. By James W. Martin, M. D. Edinburgh: E. & S. Livingstone.

The author states that this monograph formed the substance of a paper he read some years ago before the Royal Medical Society of Edinburgh, and it is unfortunate for his reputation that he did not allow it to remain buried in the obscurity of the society transactions. For, while this work has been retouched in the latter part of 1891, and contains quotations from writers as late as 1886, it is apparently written from an 1825 conception of the disease. The nomenclature given is brief; the distribution of the disease is stated in a fashion that is misleading; the historical and geographical remarks are not well selected, considering that the author had recourse to La Roche's compendious history of the disease; the clinical features are not well drawn; and the pathology is not always accurate, as when we are told that "the cloudy swelling in the hepatic cells may lead to fatty degeneration," a result that H. D. Schmidt and many others have found to be invariably present in yellow fever. The remarks on bacteriology show lack of familiarity with this feature, Sternberg's comprehensive investigations having shown that the specific infectious agent of yellow fever has not been demonstrated and that Freire's experiments were fallacious. In the remarks on treatment nothing is said of that recommended by Sternberg some years ago, which plan has proved satisfactory in the experience of some Havanese physicians.

While the statement that quarantine has not been found of much use is quite English, it is in direct variance with the admirable results obtained at New Orleans during the past six years.

At the present day unfamiliarity with the literature of a subject should be a sufficient cause for restraining the publication of a monograph, and this book neither gives a satisfactory review of what is known nor makes any addition to our knowledge of the subject, and there is no reason for its existence.

A Study of Influenza, and the Laws of England concerning Infectious Diseases. A Paper read before the Society of Medical Officers of Health, January 18, 1892. By Richard Sisley, M. D. Lond., M. R. C. P. Lond., etc. London: Longmans, Green, & Co., 1892. Pp. 11–13 to 119.

One of the first things that attract the reader's attention is a sentence in the preface that shows that sanitary matters are managed in England in very much the same fashion as they are with us, for the author says: "I am conveying no reflection on the gentleman who, by political exigencies, happens to fill the office of President of the Local Government Board, when I say that it is absolutely impossible for any man, however able, any politician, however eminent, to continue long to preside over such a department without occasion arising which calls for technical knowledge on his part." And later on he states: "The public health is a matter, not of political, but of national importance; and until the minister responsible for the public health has become also the head of the sanitary service, maladministration is inevitable." The author considers that there is no doubt that the disease is contagious, isolated cases preceding any general infection of the community and there being some evidence that influenza may be spread by goods. He does not believe that it is spread by atmospheric contamination, except as the atmosphere is contaminated by influenza patients. It should be placed in the health officer's category of infectious diseases, and its first appearance dealt with rigorously, as charts of the death-rate of several of the large cities of the world show that the deaths are more than doubled during the existence of the disease.

Délire chronique. Drs. Magnan et Sérieux. Encyclopédie des aide-mémoire. Léauté, directeur. Paris: G. Masson, Gauthier-Villars et fils. Pp. 184.

The author understands by chronic delirium an incurable morbid process, always identical, which is evolved in a definite and determinable manner, manifesting itself at different epochs in varied forms, the patient being successively uneasy, persecuted, ambitious, and demented.

The knowledge of this succession of forms is absolutely important to the diagnostician, who otherwise would, in confining himself to the pathological symptoms presented at any one period, be likely to confound the disease with similar forms of monomania, as Lasègue did in his description of the persecuted; Foville, in his work on megalomania; the Germans in their dissertations on paranoia; the English in the type described as delusional insanity, etc. There is therefore an absolute necessity of knowing not only the antecedents of the patient, so that the importance of the separate symptoms may be duly gauged, but also all the possible forms of acute or chronic, of primary or secondary, for their elimination in the diagnosis.

The numberless crimes committed by the chronically delirious render the medico-legal side of the question most important, while the long conservation of the intellectual faculties makes a correct estimate of the moral responsibility a matter of extreme difficulty.

Bacteria and their Products. By German Sims Woodhead, M. D. (Edin.), Director of the Laboratories of the Conjoint Board of the Royal Colleges of Physicians (Lond.) and Surgeons (Eng.), etc. With Twenty Photomicrographs and an Appendix giving a Short Account of Bacteriological Methods and a Diagnostic Description of the Commoner Bacteria. New York: Scribner & Welford, 1891. Pp. 459.

For many years Dr. Woodhead has held a sanitary research scholarship of the Honorable Grocers' Company of England. This position has given him manifold opportunities to study the relations of bacteria to diseases, which opportunities, judging by his clear exposition, indicative of an equally clear comprehension of his subject, he has used most profitably to himself and his readers. His methods of work are evidently most careful; his fairness in treating the conclusions of other men is beyond discussion, and the amount of information to be derived from his treatise is all that could be expected at the present time. The labor of writing such a book is very great.

A Treatise on Epidemic Cholera and Allied Diseases. By A. B. Palmer, M. D., LL. D., Professor of Pathology, Practice of Medicine, and Clinical Medicine in the College of Medicine and Surgery in the University of Michigan. Ann Arbor: Register Publishing House, 1892. Pp. iv–5 to 224. [Price, $1.50.]

This work was reviewed in the *Journal* for May 1, 1886, and, as this is the same edition, we have no comments to add.

BOOKS, ETC., RECEIVED.

A Dictionary of Psychological Medicine, giving the Definition, Etymology, and Synonyms of the Terms used in Medical Psychology, with the Symptoms, Treatment, and Pathology of Insanity, and the Law of Lunacy in Great Britain and Ireland. Edited by D. Hack Tuke, M. D., LL. D., Examiner in Mental Physiology in the University of London, etc. Vol. I. Pp. xv to 722. Vol. II. Pp. 723 to 1477. Philadelphia: P. Blakiston, Son, & Co. 1892. [Price, $13.]

Rest and Pain. A Course of Lectures on the Influence of Mechanical and Physiological Rest in the Treatment of Accidents and Surgical Diseases, and the Diagnostic Value of Pain. By the late John Hilton, F. R. S., F. R. C. S., etc., edited by W. H. A. Jacobson, M. A., M. B., M. Ch. Oxon., F. R. C. S., etc. Fifth Edition. London: George Bell & Sons, 1892. Pp. xv–514. [Price, $2.00.]

A Manual of Organic Materia Medica. Being a Guide to Materia Medica of the Vegetable and Animal Kingdoms, for the Use of Students, Druggists, Pharmacists, and Physicians. By John M. Maisch, Ph. M., Phar. D., Professor of Materia Medica and Botany in the Philadelphia College of Pharmacy. Fifth Edition. With Two Hundred and Seventy Illustrations. Philadelphia: Lea Brothers & Co., 1892. Pp. xix–25 to 556.

A Treatise on Hygiene and Public Health. Edited by Thomas Stevenson, M. D., F. R. C. P. Lond., and Shirley F. Murphey. Vol. I. Philadelphia: P. Blakiston, Son, & Co., 1892. Pp. xii–3 to 1013.

A Manual of Obstetrics. By A. F. A. King, A. M., M. D., Professor of Obstetrics and Diseases of Women and Children in the Medical Department of the Columbian University, Washington, D. C., etc. Fifth Edition, with One Hundred and Fifty Illustrations. Philadelphia: Lea Brothers & Co., 1892. Pp. xxiv–25 to 450.

Transactions of the Medical Association of Georgia. Forty-third Annual Session, 1892.

Retro-anterograde Amnesia, with Report of Two Cases. By James T. Eskridge, M. D., Denver, Colorado. [Reprinted from the *Alienist and Neurologist.*]

Two Cases of Tubercular Osteomyelitis of the Tibia. By J. T. Jelks, M. D., of Hot Springs, Ark. [Reprinted from the *Journal of the American Medical Association.*]

Comparative Value of Mercury and the Iodides in the Treatment of Syphilis. By James T. Jelks, M. D., of Hot Springs, Ark. [Reprinted from the *Journal of the American Medical Association.*]

Report of a Case of Gunshot Wound of Liver and Stomach. Laparotomy. Recovery. By James T. Jelks, M. D., of Hot Springs, Ark. [Reprinted from the *Journal of the American Medical Association.*]

Blennorrhœa. By James T. Jelks, M. D., of Hot Springs, Ark.

Two Cases of Carcinoma of the Uterus. By James T. Jelks, M. D., of Hot Springs, Ark. [Reprinted from the *Journal of the State Medical Society of Arkansas.*]

A Brief Résumé of the Carcinoma Organism Question. By A. P. Ohlmacher, M. D., Chicago. [Reprinted from the *Chicago Medical Recorder.*]

Some Effects of Blennorrhœa in Women. By James T. Jelks, M. D., of Hot Springs, Ark. [Reprinted from the *American Gynæcological Journal.*]

The Uses of Fever. The Dangers of Antipyretics in Typhoid Fever. By J. H. Musser, M. D., of Philadelphia. [Reprinted from the *Medical News.*]

Whooping-cough: its Management; its Climatic Treatment. By J. H. Musser, M. D., of Philadelphia. [Reprinted from the *Climatologist.*]

Grave Forms of Purpura Hæmorrhagica. By J. H. Musser, M. D., of Philadelphia. [Reprinted from the *Transactions of the Association of American Physicians.*]

Tuberculous Ulcer of the Stomach. By J. H. Musser, M. D. [Reprinted from the *Philadelphia Hospital Reports.*]

On the Gastric Disorders of Pulmonary Tuberculosis. By J. H. Musser, M. D. [Reprinted from the *University Medical Magazine.*]

The Limitations and the Powers of Therapeutics. By J. H. Musser, M. D. [Reprinted from the *University Medical Magazine.*]

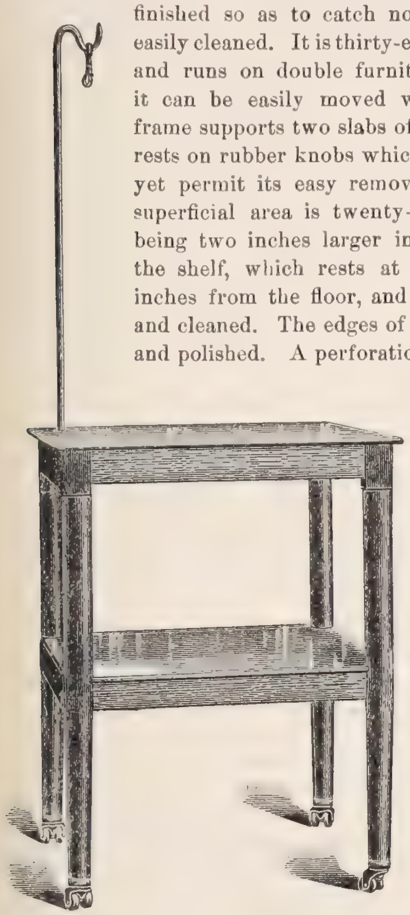
Some Clinical Remarks on Dysentery. By J. H. Musser, M. D. [Reprinted from the *University Medical Magazine.*]

New Inventions, etc.

AN ASEPTIC DRESSING-TABLE.

Designed by George N. Kreider, M. D.,
surgeon to st. john's hospital, springfield, ill.

For surgical work in the hospital and private office I have long desired a perfectly aseptic dressing-table. When dressings are made in the hospital ward there is a great temptation to place the instruments, gauzes, and bandages on the beds or chairs, and in the office the writing-desk or washstand slab is the most convenient receptacle. That such uncleanly and unsurgical habits might be avoided, I have devised the piece of furniture which I desire to bring before the profession in your columns. I believe it fills every requirement, and the small cost places it within the reach of all. The table is made in two sizes. The one for office use is described as follows: The frame is made of smooth, hard wood, rubbed down and filled and hard finished so as to catch no dirt and to be easily cleaned. It is thirty-eight inches high, and runs on double furniture castors, by which it can be easily moved without jerking. This frame supports two slabs of plate glass. The top rests on rubber knobs which hold it in place and yet permit its easy removal for cleansing. Its superficial area is twenty-four by thirty inches, being two inches larger in each dimension than the shelf, which rests at a height of nineteen inches from the floor, and can also be removed and cleaned. The edges of both slabs are rounded and polished. A perforation at one corner of the top admits a half-inch galvanized iron rod, which extends into the table leg and rises twenty-two inches above the top of the table and carries the irrigator at a height of sixty inches above the floor. The table for hospital use is somewhat larger, its dimensions being twenty-four by forty-four inches. By referring to the accompanying cut, made from photographs, the aseptic possibilities of the table can be quickly appreciated. Two of these tables have been in use in St. John's Hospital and have proved valuable adjuncts to the surgical work. I have also had one in use in my office, and find it a handsome piece of furniture, to say nothing of its utility. These tables were made after my plans by a firm in this city, and can be furnished at a uniform price of $25 each. Should any be ordered through me, I shall take pleasure in inspecting them before they are shipped.



A NEW UVULOTOME.

By F. C. Raynor, M. D.,

ASSISTANT SURGEON, SKIN AND THROAT DEPARTMENT, BROOKLYN EYE AND EAR HOSPITAL.

The operation of amputation of the uvula by forceps and scissors, as recommended by a number of authorities, is an effectual method of shortening elongations of this organ, but that it does not accomplish its purpose in the most satisfactory manner to both operator and patient is proved by the number of uvulotomes which have at various times been offered to the profession. Several varieties have been tried by the writer, and none have worked perfectly under the varying conditions found in those on whom it was necessary to perform uvulotomy. Without discussing defects in those instruments used, or dwelling on the conditions which frequently embarrass the operator, let me state what, in my opinion, should be the qualifications of a good uvulotome: 1. We should be able to use it independent of any assistance on the part of the patient. 2. It should be able to cut uvulæ of any size in shallow as well as roomy pharynges. 3. It should have the seizing attachment grasp the uvula before the cutting blades touch it, and should have the mechanism so arranged that cutting is not impeded in any position by the claws. The effort to design an instrument capable of fulfilling the conditions set forth has necessitated a radical departure from existing models, but, after numerous trials, the uvulotome here presented has left nothing to be desired in its performance, and is offered to the profession in the belief that its general use will save annoyance to both physician and patient. Fig. 1 shows the complete instrument closed. Fig. 2 is a section opened. The male blade has at its distal extremity a curved knife, *b*, cutting scimeter-like, on the convex, which plays across the ring, *d*, of the female blade. The inner margin of the ring is beveled from the lower side and ground to a cutting edge. The seizing hooks, *c*, are operated by the device shown at *a*, which is so adjusted that the hooks are not separated until the instrument is opened to its fullest extent. At the beginning of the closure of the handles the hooks spring together, grasping the uvula before the knife touches it. This independent seizure frees us from the resistance we have to overcome in uvulotomes of the scissors type, where the claws are attached to and close in advance of the blades, and makes a rapid, smooth cut easy of performance. Section of the uvula is made by the combined action of *b* and *d*, the curved edges facilitating perfect division. To operate, depress the tongue with the left hand, introduce the uvulotome wide open, bring up the ring around the uvula until the desired amount to be excised is included, and rapidly approximate the handles. As the entire procedure requires only a few seconds, cocaine is not necessary. I have found it most advantageous to operate the instrument with the thumb and middle finger of my right hand, the index finger steadying the female blade, the hand being held palm upward. The satisfactory working of the instrument depends largely on the perfection of the mechanical detail, and for this I am greatly indebted to Messrs. George Tiemann & Co., 107 Park Row, New York.

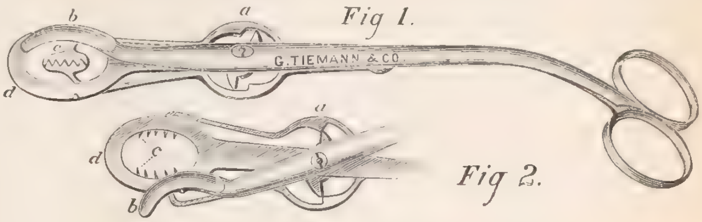


Fig 1.

Fig 2.

Miscellany.

The Hartford County, Connecticut, Medical Association held its hundredth annual meeting on Monday, September 26th, under the presidency of Dr. William A. M. Wainwright, of Hartford, who addressed the meeting as follows:

"A hundred years in the world's history is perhaps as a single pebble upon the beach, but to us who move and play our parts upon the stage of life it is a long and momentous lapse of time—more than the natural span of human life; and if some solitary traveler does journey on toward the hundredth milestone, his path is hard and toilsome, and 'his strength is but labor and sorrow.' It is a solemn thought that, as one can almost say, there is no human being, nor, so far as we know, any living creature, alive to-day who drew breath at the beginning of the epoch we are here to commemorate. So it seems to me that it affords matter for serious reflection for those of us who meet here to look back into the century just ended, and to take the first step into the century just begun. Looking backward, calls to mind the lines found upon an ancient clock:

"'I'm old and worn, as my face appears,
For I've walked on Time for a hundred years;
Many have fallen since my race began,
Many will fall e'er my race I've ran.
I've buried the world with its hopes and fears,
In my long, long march of a hundred years.'

"What the coming century will bring forth, of course no tongue can tell, nor how those celebrating the two hundredth anniversary of our association will look upon our efforts of to-day.

"We ought, however, I think, to consider ourselves fortunate that we live in the age of our country's centennials. It is no light matter to have been privileged to join in celebrating the wonderful development of our nation; the marvelous discoveries of science, the innumerable improvements in all the ways and walks of life which the past century has brought forth, and of which we, in this year of grace, are reaping the benefits. Looking back into the past, it seems a blessed thing to have been born and to live in the nineteenth century. Life is a very different thing to-day from what it was a hundred, nay, fifty years ago. It almost takes one's breath away to stop and think of the immense strides that have been taken since our century began in the advancement of all things that go to make up the civilization of to-day. Only to begin to enumerate the most important of them would take much more time than has been allotted to me.

"To the lasting honor of the medical profession it can be said, with the utmost truth, that in no branch of any art or science has the advancement been greater than in our own, and to no one class of men is the world more indebted to-day than it is to noble and honored members of our craft. To name them all would be to fill a volume, but to prove that the pride which is in us is not false in character, I have but to mention the names of Bichat, Broussais, Laennec, Louis, Trousseau, Hunter, Sydenham, Cullen, Jenner, Bright, Cooper, Skoda, Rokitansky, Virchow, Pasteur, Koch, Rush, Warren, Mitchell, Bard, Physick, Hosack, Dewees, Sims, Nathan Smith, Mott, Van Buren, Gross, McDowell, Kimball, Atlee, Knight, Wells, Simpson, and a name which is almost unheard, if not entirely unknown to most of us, but one which ought to go down to posterity with the rest—Dr. Karl Koller, of New York, who, when a medical student in Vienna, discovered the anæsthetic properties of cocaine. When it is taken into consideration that whatever has been done in our ranks during the past century has been done for the good of the human race to relieve its sufferings, to give it life and health and strength, and, under God, to increase the number of its days, we may, I think, be pardoned for the honest pride we have in meeting here to celebrate the end of our first hundred years' work, and to do honor to those of us who have passed on before. It is not only 'the evil that men do that lives after them,' it is the good that they have done, that 'makes the whole world kin,' that keeps their memories ever green, and that makes us love to talk and think of their noble lives and unselfish deeds which have made life a hundred times more worth living to-day than it was a hundred years ago. That the Hartford County Medical Association has well played its part in the century's humanitarian work would not be difficult to prove.

"'By their fruits ye shall know them.' I do not intend to encroach upon the province of our historian, but I can not forbear to mention some of its monuments: The Deaf and Dumb Asylum, the Retreat for the Insane, the Hartford Hospital, and connected with it the Old People's Home. Of course—and for which God be praised—it is to the noble and generous liberality of the ever-ready body of laymen that our county and our city are indebted for the foundation and maintenance of these most noble charities; but the Paul that planted and the Apollos that watered were, to our honor be it said, members of the Hartford County Medical Association—Cogswell, Todd, Sylvester Wells, Carrington, Pardon Brownell, Sumner, Woodward, Brigham, Pierson, Gridley, Butler, Fuller, Beresford, Hawley, Hunt, Jackson.

"It seems a fitting thing that we should invite our brethren of the other 'learned professions'—divinity, law, and literature—to join with us in this celebration. From the beginning medicine has been bound up, more or less intimately, with them all, and to-day, while perhaps the pathways separate more than they did in the early days, the respect and regard which medicine holds for them all is still most strong and firm. The connection between the Church and medicine has always been a most intimate one. With the ancients, the idea prevailing that all disease was caused by the anger of the gods, naturally placed its treatment in the hands of the priests.

"During the middle ages physicians were invariably priests, and, owing to a canon of the Church which forbade a priest to shed human blood, operative surgery was turned over to the barber surgeons. We owe to the Church the foundation of hospitals and dispensaries. They had their birth in the monastic system. Every monastery had its 'infirmaria,' presided over by an 'infirmarius.' The establishment was not only for the sick, it also afforded a place of refuge for the aged and the blind. The first hospital in England was founded by Lanfranc, archbishop of Canterbury, in 1080, and all establishments for the care of the sick remained in the hands of the clergy until after the Reformation. In our own early colonial days the offices of minister and physician were in many instances united in the same individual.

"In a thousand ways is medicine indebted to the Church, and it is a debt which we are ever ready to acknowledge and do our best to pay. The doctor and the clergyman often meet in the never-ending conflict which the 'grim monster, Death,' is unceasingly waging against our kind. Standing shoulder to shoulder, they strengthen each other, and, if a victory is not won, they together make defeat as little cruel as it can be made.

"By the law we are often used as well as abused, but the connection between the two professions is a close and cordial one. To tell what the connection is would be to give a history of the origin and growth of medical jurisprudence and public hygiene, which is not in the province of this address, even if the time would allow. That we are a prolific race of writers, a glance at the shelves of the great medical library of the Surgeon-General's Office at Washington, with its 80,000 medical volumes and its 120,000 medical pamphlets, would readily prove, to say nothing of the ever-increasing army of medical periodicals, to all of which we are so constantly and earnestly called upon to subscribe. But it is not only in medical literature that we claim a place. In the realms of general literature and belles-lettres many a brilliant medical star has cast a shining light. St. Luke was a physician. So were John Locke, and Oliver Goldsmith, Keats, Akenside, Crabbe, Sir Thomas Browne, John Brown, Erasmus, Darwin, Wolcott (Peter Pindar, as he was better known), Sir James Mackintosh. In this country, Mitchell, Francis, Hosack, Draper, Percival Holmes, Weir Mitchell, Hammond, and many other lesser lights. Our own county has held its own in the past: Dr. Lemuel Hopkins, a poet and political writer of much note in his day; Dr. Elihu H. Smith, who wrote an opera in three acts in 1797 entitled *Edwin and Angelina*, and in 1798 a five-act tragedy entitled *André;* Dr. Sylvester Wells, Dr. George Sumner. For the present, it is needless for me to say that the poet's mantle has fallen upon strong and able shoulders, and our local reputation will not be allowed to become dim or tarnished. A more intimate knowledge of French and German authors than I possess would doubtless call to mind many distinguished medical names by which the general literature of their respective tongues has in like manner been enriched. An authority on the subject says: 'The number of brilliant writers who have enrolled themselves in the medical fraternity is remarkable. If they derived no benefit from their order, they have at least conferred luster upon it. Anything like a complete enumeration of medical men who have made valuable contributions to belles-lettres would fill a volume.

"'If the physicians and surgeons still living who have openly or anonymously written with good effect on subjects not immediately connected with their profession were placed before the reader, there would be found among them many of the most distinguished of their fraternity.'

"It has been a pleasant duty for us to ask our fellow-townspeople to assist us, by their grateful presence, in this celebration. Of the close and intimate relation between doctor and patient it would not become me, at this time, to speak, and I know that to you, my brethren, it is not necessary to speak. If we owe to them and their distress our daily bread, we also owe to their firm and loyal friendship debts which can not be canceled by any stroke of pen, or wiped out by any process of which I am aware. They constitute the pleasantest and most grateful burdens of our lives, and we would not pay them if we could. Although inappropriate as it may seem, I can not close this address without expressing to you, members of the Hartford County Medical Association, my grateful appreciation of the undeserved honor you have conferred in calling me to this office in this centennial year. I can only say, I thank you, and express the hope that the coming century of the association may be as honorable and upright as the past has been, and that when the second centennial celebration takes place, those looking back on us as we look back upon those of the past, will be able to say, with grateful hearts, of us, as we with truthful lips can say of them, 'They have fought the good fight, and have kept the faith.'"

Other addresses were made by Dr. Joseph E. Root, the Mayor of Hartford, and others, and a centennial poem was read by Dr. Nathan Mayer.

The Columbian Exposition.—The committee on medico-climatology (Dr. T. C. Duncan, chairman) has issued the following circular, entitled a preliminary address:

"The year 1893 will be made memorable by the exposition that the world will hold in Chicago. There will be gathered not only the exponents of the industrial wealth of the world in all the forms of material progress, but the advances made in art, science, and civilization will also be set forth.

"A series of congresses representing all of the departments of thought and scientific investigation is a true, even an indispensable, part of a world's exposition.

"In accordance with this idea, the world's congress auxiliary has been organized in connection with the world's Columbian exposition, and has been recognized and approved by the Government of the United States. Among the assemblages to be convened, what more fitting than that the department of medicine, the great healing art, with its many divisions, should be conspicuously presented? What more opportune time could have been selected by the climatologists of the whole world to meet and compare their observations and views on the different climates of the earth, and their effects upon humanity, and the diseases to which flesh is heir?

"With that object in view, a local committee of arrangements has been appointed by the world's congress auxiliary, and an advisory council will be selected from those eminent in this department in different parts of the world, to arrange a world's congress of medical climatology, to be held at Chicago during the exposition season of 1893.

"The design is to hold this congress at a time convenient to those who will attend the congresses of the other divisions of the department of medicine which are assigned to open May 29, 1893. This early date was chosen to accommodate those who will desire to attend the medical congress to be held in Rome in November of next year.

"The movement is, as yet, in a formative stage, and much thought must be given to it before a detailed programme can be formulated.

"The following topics have been suggested, and others will doubtless be added before the final programme is announced:

"The Leading Characteristics of the Climates of the Various States, Countries, and Sections of the World.

"Diseases produced by the Climatic Peculiarities and Weather Changes in the Various Countries.

"Relation of Climate to Consumption. Climates in which Consumptives recover, or are materially benefited.

"Health Resorts: Special Features.

"Relation of Climatic Changes to Epidemics.

"Changes of Climate due to Cultivation. The Effects of the Destruction of Forests, and other Changes incident to Civilized Life.

"The Relations of Diet and Climate.

"What may be done to improve or modify Climates for the Promotion of Health and Comfort?

"Geography of Carcinomatous and Sarcomatous Diseases.

"Geography of Bright's Diseases.

"Climatic Factors which produce Epidemic Influenza.

"Relation of Climate to Rheumatism.

"Relation of Climate to Catarrhal Diseases.

"Relation of Climate to Longevity.

"Waters and Climate.

"Climatic Effects upon the Eye.

"Relations of Climate to Diseases of the Ear.

"The Effects of Sun Spots upon Climatic Conditions.

"What more can the Weather Bureaus do to aid Climatologists and disseminate Climatological Knowledge?

"Comparison of Climatic Differences as manifested by Similar Diseases in the North and South Temperature Zones.

"Climatic Relations to Remittent and Periodical Fevers, and to Continued Fevers.

"Climatic Relations to Malaria.

"Acclimation. Disorders produced by Migration.

"It is the purpose of the committee, with the advice of the council, to arrange for a report from each State and country of its climatic peculiarities. The health resorts of each State and section will also be properly represented.

"This congress will afford a most favorable opportunity to compare the climates of the various States, countries, islands, and continents of the whole world, from a medical standpont, by delegated representatives of the various localities.

"The changes that occur in climates, and which possibly attend the great epidemics, merit world-wide attention.

"If the effects of climates upon the one disease, consumption, can by such comparison be fairly ascertained and approximately settled, great good will result to afflicted humanity.

"The bearing of climate upon such diseases as rheumatism, catarrh, cancer, and Bright's disease, and generally upon health and longevity, will form especially interesting questions for consideration in the congress.

"The committee would be pleased to have suggestions as to topics and modes of proceeding, as well as those who may take part in the discussions. Proposals for membership of the advisory council are also invited."

"Cœliotomy" versus "Laparotomy" as a Surgical Term.—Dr. Robert P. Harris, of Philadelphia, has issued the following circular:

"When you perform an abdominal section, and report the case, under what scientific term do you describe the operation? You probably call it a 'laparotomy,' because hundreds of operators are in the habit of using the same word, or its synonym, in a dozen countries and languages.

"Where did this term originate? You say it has a Greek derivation (the language of Greece having been the tongue of the first anatomists) and comes from two words, *lapara;* and *tomæ* [*sic*], to cut. Now, what did the Greeks call the *lapara?* It was certainly never the abdomen.

"Did you ever look carefully into an ancient Greek anatomy to find out what the abdomen was really called in their language? The word *belly* appears ten times in the English version of the New Testament; did you ever note that the original Greek has the work *koilia*, and never *lapara*, in these ten places?

"Rufus, of Ephesus, a distinguished physician and writer, born A. D. 112, wrote a paper entitled Names of the Parts of the Human Body, in which he has this significant sentence: 'The *omphalos* (navel) is the hollow which occupies the middle of the *koilia*, where we cut the veins that nourish the fœtus; the middle part of the hollow is the *akromphalon*' (top of the navel).

"'Lapara' is a very old Greek term, and was applied in the time of Hippocrates to the parts between the short ribs and the iliac bone (the flank), and scores of old lexicographers have thus defined it. The operation for lumbar hernia, or laparocele, was a true laparotomy; and so, also, is that of lumbar, or laparo-colotomy. The term *lapara* originally meant a hollow, and was for this reason applied by the early anatomists to *the hollow of the waist.* It was never used to designate a convexity.

"The misapplication of the term 'laparotomy' commenced in the year 1811 in the medical thesis of a Wittenberg student of the name of Fiedler, who wrote in Latin under the title 'De laporatomia.' He had witnessed a true laparotomy performed on October 17, 1810, upon a man of fifty with a diseased colon, as he lay on his right side. Fiedler wrote again in 1817, and took it upon himself to coin such distortions as 'laparo-gastrotomia,' 'laparo-raphia,' and 'laparo-hysterotomia'—his desire seeming to be to supplant the term '*gaster*,' which really meant the belly, by the word 'lapara,' which a careful investigation would have taught him was not its Greek synonym. The mystery is how an error of this kind ever made the progress that it has in leading the medical world astray.

"'*Koilia*' being the Greek word for abdomen, the natural synonym of gastrotomy in its old meaning is 'cœliotomy,' pronounced soft (sele-otomy). This is not a new coinage except as to its terminal, for we have long had *cœlio-paracentesis* for tapping the abdomen. The term cœliotomy has been adopted by Professor Sänger, of Leipsic; by Dr. J. Greig Smith, in his *Abdominal Surgery;* by Professors Keene and White, in their *Text book of Surgery;* and by a number of well-known medical writers. This adoption gives us the compound terms *cœlio-hysterotomy* (Cæsarean section), *cœlio-hysterectomy* (exsection of uterus through the abdomen), *puerperal cœlio-hysterectomy* (Porro-Cæsarean operation), *cœlio-nephrectomy* (abdominal exsection of the kidney), etc.

"What characterizes the present position of our condemned term is its wonderful tenacity of hold in the nomenclature of gynæcological writers who have admitted the error of its application in abdominal surgery. Two years ago I published a classical pamphlet on the subject and sent it to prominent writers in thirty different countries. I also sent a copy to every fellow of one of our leading national medical societies just before it met in annual session in 1890, and their letters attested its effect upon their sense of reason. It convinced them that *lapara* was not the abdomen and that *koilia* was; but it did not break up the habit of use, as shown by the fact that four papers entitled 'laparotomy' appeared in their *Transactions* for 1891, and the term was time and again made use of throughout the volume, but no one said 'cœliotomy' as much as once. The old rut is so easy to run in, and the laparotomy wheel will get in. It took eighty years to propagate the error, and it will take time to correct it."

Congenital Absence of the Rectum and Anus.—Dr. John C. Hupp, of Wheeling, West Virginia, writes to us as follows:

On the 17th of September, 1892, I delivered Mrs. —— of her second child, which was minus an anal opening, a sphincter ani, and a rectum. The child without anæsthesia and in proper position, an incision in the line of where the anus should be was made from the scrotum to the coccyx by Dr. Frank Hupp, strict antiseptic precautions being observed and careful dissection made, following up a diminutive cord which was not larger than a small timothy stock, scrupulously avoiding the urethra and neck of the bladder until the peritonæum was reached, when, upon careful exploration with the finger, no pouch was discovered. Admonished by the early and high mortality following the establishing of an artificial outlet in cases of this character, further exploration or operation was abandoned, and the artificial canal was filled with iodoform gauze.

A very diminutive, retractive penis occupied the upper surface of the abnormally large scrotum. A superabundance of integument occupied the rear portion of the neck, extending toward the back and shoulders. After the first twenty-four hours the child failed to take nourishment; it did not vomit; marked tympanites developed on the third day; on the fourth day there were occasional convulsive twitches; peritonitis, followed by occasional convulsions, closed the child's brief career on the fifth day.

Autopsia cadaverica was denied. In over three thousand deliveries I have met with one case each of acephalia, hydrocephalia, spina bifida, and anal imperforation, and several cases of club-feet, but this is, in my experience, the only case minus the anal opening and the rectum.

On the Action of Alcohol and its Value in Disease.—The American Medical Temperance Association, through the kindness of Dr. J. H. Kellogg, of Battle Creek, Mich., offers the following prizes:

1st. One hundred dollars for the best essay On the Physical Action of Alcohol, based on Original Research and Experiment. 2d. One hundred dollars for the best essay On the Non-alcoholic Treatment of Disease.

These essays must be sent to the secretary of the committee, Dr. Crothers, Hartford, Conn., on or before May 1, 1893. They should be in type-writing, with the author's name in a sealed envelope, with a motto to distinguish it. The report of the committee will be announced at the annual meeting at Milwaukee, Wis., in June, 1893, and the successful essays read.

These essays will be the property of the association and will be published at the discretion of the committee. All essays are to be purely scientific and without restrictions as to length, and limited to physicians of this country.

Address Dr. T. D. Crothers, secretary, Hartford, Conn.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

Original Communications.

A STUDY OF THE ARTIFACTS OF THE NERVOUS SYSTEM.

The Topographical Alterations of the Gray and White Matters of the Spinal Cord caused by Autopsy Bruises, and a Consideration of Heterotopia of the Spinal Cord.

By IRA VAN GIESON, M. D.,
ASSISTANT IN HISTOLOGY AT THE COLLEGE OF PHYSICIANS AND SURGEONS, COLUMBIA COLLEGE, NEW YORK;
PATHOLOGIST TO THE MANHATTAN EYE AND EAR HOSPITAL AND TO THE CITY HOSPITAL, NEW YORK.

(*Concluded from page 379.*)

Section VI.

AN ANALYSIS OF THE ERRONEOUS CASES OF SPINAL-CORD MALFORMATIONS PRODUCED BY MANIPULATION, OR DISEASE, OR BOTH COMBINED.

Of the thirty-two cases in the literature of spinal-cord malformations, the only real instances of true heterotopia or malformation of which we feel positive are the eight cases described in Section II; these are the only cases on record where the extra portions of gray matter (Pick) or the misplaced nervous substances (Pick, Cramer, Kronthal, and Virchow) are actually of developmental origin.

The supposed malformations in the remaining twenty-four cases analyzed in this section are either simply cases of bruising or, in a few instances, the results of disease. In fifteen of these cases (cases No. 2, 4, 5, 6, 7, 9, 10, 11, 13, 14, 16, 18, and 20) the supposed malformations were produced by bruising alone. In five of the cases (3 (?), 8, 12, 15, and 17) the alleged malformations were not entirely caused by bruises, but were due to some extent to destructive and deforming diseases. In these five cases the cord had been damaged during life by acute myelitis, and the bruising or handling at the autopsy had increased the distortions of the gray and white matters induced by the myelitis. Acute myelitis renders the cord more susceptible to bruises, and the resulting deformities are always more extensive than in a normal cord. In four of the cases (3, 4, 8, and 14) artificial duplications of the cord, due to bruising, were mistaken for congenital malformations. Two of these cases (3 and 4) show a very perfect form of artificial duplication, while the remaining two (8 and 14) show less perfect or incomplete forms of duplication artifacts. In one of the cases (No. 1) the so-called malformation appears to have been produced by tabes dorsalis.

The mere fact that there were no symptoms or bodily defects in any of these cases pointing toward the cord deformities should throw a great deal of doubt upon their supposed preformed origin; yet the cases have been quite unreservedly described as malformations existing during life. In order to make the review of these perfectly clear and brief—and especially for comparison with the drawings belonging to Sections II and IV—we have reproduced the original plates accompanying the articles analyzed in this section.

No. 1. *Case of Kahler and Pick* (22), *1879.*—The writer has hesitated about classing this case among the erroneous instances of spinal-cord malformations, but it has been included with them, because it seems difficult to exclude disease—tabes dorsalis—as the factor producing the changes described by the authors as a malformation.

The malformation in this case consisted in an abnormal narrowness or thinning of the posterior horns, so that the contour of the gray horns resembled the type seen in animals, such as the ungulate or carnivorous orders, rather than the classical type characteristic of the human cord. (See Fig. 1.) The posterior or white columns were also very narrow, and the columns of Clarke appeared to be defective in the middle dorsal region, although normal in the lowest dorsal and uppermost lumbar regions.

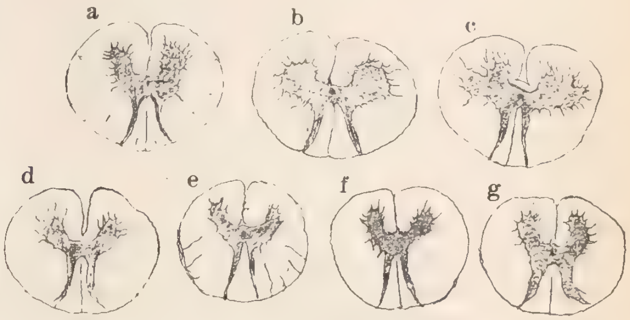


Fig. 1.—Kahler and Pick's case.

The cord came from a case of tabes, and showed the usual lesion in the posterior columns. The authors, however, dismiss the question of the production of the change in the posterior horns by the tabetic lesion in the posterior white columns, because these were not retracted at their peripheral margins, and the tissues of the narrowed posterior horns did not show the structure of the old and shrinking stage of sclerosis. But these are not very convincing reasons for rejecting the tabetic origin of the deformity.

After dismissing the tabetic origin of the deformity, the view is presented that the change in the shape of the posterior horns was a congenital malformation due to a deficient embryonal site (*Anlage*) or development of the posterior columns or horns. The suggestion is finally made that the primary starting point in this defective development of the cord was localized in a deficient volumetric fœtal arrangement or subsequent development of the *bandelettes externes* or columns of Burdach.

The shrunken condition of the columns of Clarke leads toward this suggestion, because of the anatomical relation, which the writers note, between the bandelettes and the columns of Clarke. The whole context intimates that the primary defective growth of *bandelettes externes* would operate in a secondary manner to diminish the columns of Clarke and the posterior horns. A question is presented as to whether the nature of the developmental error in the bandelettes consists in an arrested or faulty development of the medullary sheaths of their nerve fibers.

In consequence of their view of the developmental origin of the supposed malformation, the authors suggest the hypothesis that the malformation of the cord tended to invite the occurrence of the tabetic lesion, and that the neurotipathic disposion in general sometimes depends upon defective development.

This is the first instance in the literature on heterotopia in which the supposed causal relation to disease of these alleged spinal malformations, or the dependence of the neuropathic disposition in general upon defective development, is discussed, and it is for the reason that this discussion in Kahler and Pick's paper, and in the next article of Fürstner and Zacher, has served as a text for the elaboration of the same theme by subsequent writers, that the matter of dependence of disease and neuropathic disposition in these two misunderstood deformities is reviewed with some detail.

As to the case of Kahler and Pick, notwithstanding their high authority, it seems to me that the case is simply one of atrophy of the normally developed posterior horn, produced directly or indirectly by the posterior sclerosis, such as is observed occasionally in cases of long duration. The remarks of the authors, based on their own case, concerning the neuropathic disposition, do not seem to be justified by the facts.

The writer has met with one instance of tabes of very long standing—an old orderly at Bellevue Hospital, who had tabes for twenty-five or thirty years—in which the long-continued posterior sclerosis had produced changes in the posterior horns quite similar to those in Kahler and Pick's case. In the writer's case the posterior sclerosis involved the whole cord up to the nuclei of the posterior columns, which were hardly at all retracted at their peripheral margins, and although it was not easy to decide whether the sclerosis directly involved the posterior horns, these were atrophied in the upper lumbar, dorsal, and, to a less striking extent, in the lower cervical regions, so that the sections resemble *a*, *d*, *e*, *f*, and *g*, in Kahler and Pick's case, Fig. 1 (*a*, upper cervical; *d*, upper dorsal; *e*, *f*, mid-dorsal; *g*, upper lumbar). With the exception of *b* and *c*, the shrinking of the posterior columns and atrophy of the posterior horns shown in the other figures are not remarkable in an old case of tabes. In *b* and *c* the deformity produced by the tabetic lesion is extraordinary, and much more pronounced than in the writer's case.

Kahler and Pick's case was examined before the discovery of the important staining methods of the present time, and before Lissauer (Fortschritte der Medicin, 1886) called attention to the secondary atrophic condition of Clarke's columns, which the writers do not apparently appreciate, and which we have since found to be quite a uniform and characteristic feature of tabes.

Taken altogether, the deformity seems quite conclusively to be secondary to the tabetic lesion, and not at all responsible for its invasion of the cord.

No. 2. *Schultze's Cases* (23), *1881.*—Schultze, in an address on the relation of developmental anomalies to the neuropathic disposition, notes that it not infrequently happens that peculiar and but little known abnormities of the cord structure, particularly in the distribution of the gray and white matter, occur in cords subject to chronic lesions. By this, Schultze is referring to the condition of heterotopia and instances two cases.

First Case.—In the first case, one of amyotrophic lateral sclerosis, *the gray matter of one side of the lumbar enlargement was pierced or traversed centrally by a band of white matter* which was not degenerated. In the cervical part the superficial neuroglia did not go around over the anterior median white columns into the anterior fissure, but passed directly through the middle of the anterior horn.

Second Case.—In the second case, one of general paresis, in the dorsal and upper lumbar regions *there were curious distortions of the configuration of the gray matter, so irregular as to be difficult to describe. Portions of the gray matter were dislocated and isolated from the parental masses by interfering bands of white matter.*

There are no drawings of the appearances in these cases, yet, I think, they can be safely pronounced as due to artificial means or bruising; for the deformities do not correspond at all with the characteristics of the true cases of heterotopia in Section II, but are counterparts of the appearances shown to be due to bruises in Sections IV and V. The "interfering bands of white matter" and the "dislocated portions of gray matter" which Schultze speaks of betray the artificial origin of the deformity, and these are simply analogous to the bruised and deflected cord substances abundantly shown in our drawings.

It is unfortunate that Schultze lent the authority of his name in impressing these two cases of artifacts of the cord into the service of the neuropathic disposition, and advised the collection of statistical material of like cases to throw light on their relation to the induction of spinal diseases; for his example has been industriously followed, and hardly a single subsequent writer, mistaking bruises for malformations, resists the belief that the supposed malformation may have had some causal relation to the disease for which the cord was removed.

In this way the relation of their misunderstood cases to the neuropathic disposition, indicated by Kahler and Pick, Fürstner and Zacher, and especially Schultze, has been followed from one writer to another, until to-day, reasoning by analogy from the recognized tendency which other congenitally malformed organs have to invite disease, it is made to appear that the spinal cord is also liable to become diseased when affected with these supposedly frequent malformations which in most instances are nothing but autopsy bruises.

No. 3. *Case of Fürstner and Zacher* (24), *1882.*—This case is described rather diffusely and is difficult to review concisely. It will be sufficient to show that the case is one of bruising of the cord rather than to be concerned with the deductions, which appear all through the paper, based upon the error of the writers in mistaking an autopsy bruise for a congenital malformation. Congenital malformations of both the cord and brain are described.

The alleged cord deformity was of the heterotopic order and also consisted in a doubling of the cord, but I have no hesitation in pronouncing the deformities to be due to an autopsy bruise—a bruise which, in addition to the production of the ordinary minor displacements and asymmetries of the cord substances, was violent enough, at one place, to telescope one portion of the cord down over another so as to form doubling of the cord over a limited space.

The cerebral changes consisted in an atrophy of the left frontal lobe, where there was a sac of fluid distending the pia mater, and a widening of the lips of the Sylvian fossa, all of which the writers are inclined to consider a congenital malformation — apparently considerably influenced in this conclusion by the existence of the cord malformation. These cerebral changes do not positively indicate a congenital origin; they might have been well enough the effects of disease of the Sylvian vessels, which element the writers do not at all eliminate, nowhere mentioning the condition of these vessels. But they think that the two sets of deformities of the brain and cord were more or less naturally associated with each other in indicating some weakness of development of the whole central nervous system.

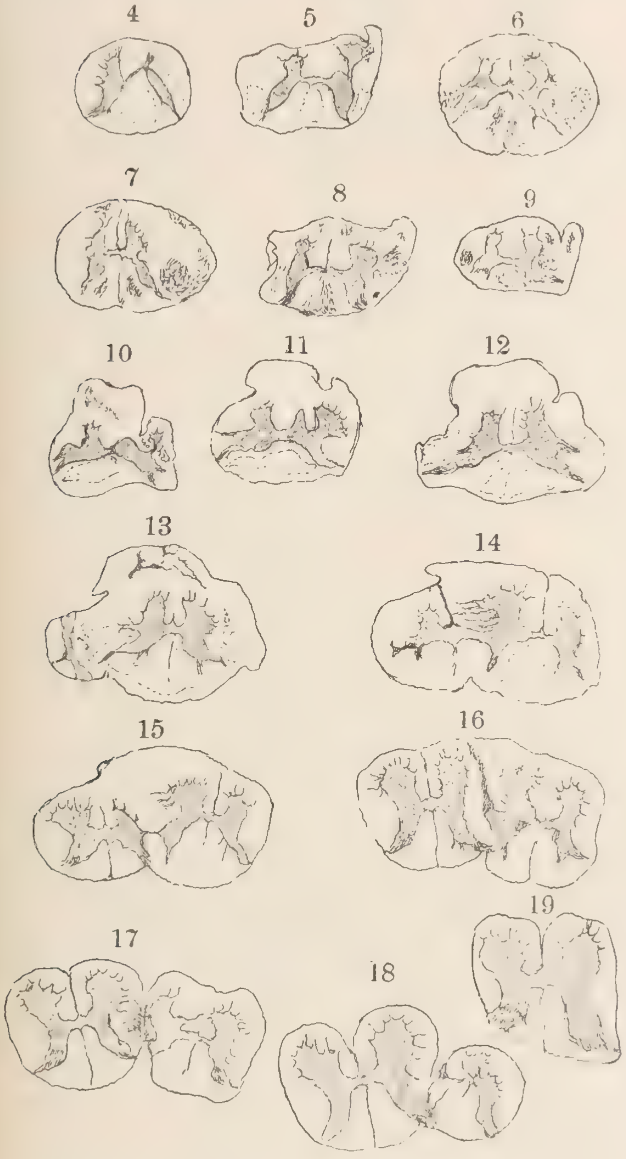


Fig. 2.—Fürstner and Zacher's case. Artificial duplication of the cord.

The introduction of the paper is taken up with a general discussion of the induction of the neuropathic disposition by such deformities of the cord, and presents the view that the case itself is a specific example of how the weak anatomical constitution of the nervous system made it prone to disease (there were dementia paralytica and myelitis). An outline of the clinical history is given here to show that there were no symptoms whatsoever of the supposed cord malformation, which in itself militates strongly against the idea that any such extensive distortions as in this case could have existed during life. The autopsy report of the cord is reproduced in full, for it is a good description of severe bruising of the cord. The report of the microscopical examination is very long, and only enough of it is abstracted to show that the appearances of the sections are counterparts of the artifacts already described in the two preceding sections.

Clinical History.—A left-handed man, aged fifty, *had no bodily deformities*, and had worked in a caisson for some time. He had dementia paralytica with disturbances of equilibrium and rigidity; there were also tremors and sensory disturbances. The patellar reflex was absent, and later a myelitis produced paraplegia, and finally death.

Autopsy.—The spinal column was not deformed and had a normally developed single dura mater and arachnoid coat lining it. After opening the spinal canal, the cord was observed to have a peculiar shape. In the lowermost dorsal region it was exceedingly narrow, but in the lowest dorsal and upper lumbar regions, for a distance of four to five centimetres, the cord was swollen and irregularly thickened, so that a condition resembling an intramedullary tumor was produced. The surface of the thickened portion was very uneven and showed numerous indentations, furrows, and prominences. Altogether this thickened portion of the cord appeared as if the real cord were surrounded by a broad zone of extra nervous material upon which the pia mater lay. *The cord just above the swollen region was so soft that it flowed out for a short distance, and was lost in spite of the efforts made to keep it intact.*

Microscopical Examination.—The spinal cord showed two sets of alterations—malformations and pathological changes. The cord was free from abnormities to the seventh or eighth dorsal segments, where a series of changes in the configuration of the gray matter began and developed more extensively as the sections passed downward.

At the uppermost level in the cord the deformities make their appearance in this manner: The right anterior horn becomes smaller than the left, due to the horizontal passage of a bundle of white fibers from the right to the left side of the cord, which gradually becomes larger and larger, and replaces entirely the right anterior horn, and then spreads out like a brush at the periphery of the cord. (See Fig. 2, *4*.)

The further course of this anomaly, beginning as shown in *4*, could not be traced accurately in the lower dorsal region, for this region of the cord, as already mentioned in the autopsy report, flowed out in handling the cord and was not hardened in its proper position. The extruded portion was hardened, however, and, by comparing the configuration of the sections with *4*, the authors think it probable that the continuance of the deformities is in the order of the figures from *5* to *11*.

Fig. 2, *5*, probably corresponds to the ninth or tenth dorsal segments; the white matter in this section was arranged in various bundles, running in irregular directions, and the white commissure was absent. (The figures have been drawn on such a small scale in the original article that they are of hardly any value at all in showing the arrangement of the white matter.)

Fig. 2, *6* and *7*, from the extruded portion of the cord, are nearly normal, sections 8 and 9, from the lowest level of the same portion of the cord, show an asymmetry of the gray matter and the same sort of bundles of white fibers running about in abnormal courses and directions as shown in *4* and *5*.

The remainder of the sections illustrate the appearances in the swollen voluminous portion of the cord described in the autopsy notes. Sections 10, 11, and 12 show well enough what has happened in this case, and the lengthy description in the original paper may be omitted. The most striking feature about these three sections is the accession of an extra amount of abnormally arranged white matter in the anterior half of the cord in front of the anterior horns. The posterior horns are also spread apart and flattened out.

In section 13, besides the extra amount of white matter in the anterior portion of the cord, there is also an extra volume of white matter on either side of the cord. On the left side, the extra portion of white matter incloses an accessory fragment of gray matter, which has the arrangement of the gray commissures. The white fibers toward the periphery of this section are arranged irregularly (horizontally ?), but much of the remaining white matter was vertically arranged.

The succeeding five sections show the doubling of the cord in the swollen portion, and in *19*, below this swollen portion, the cord structures are normally arranged.

Remarks.—It is unnecessary to discuss the minutiæ of microscopical appearances in this case to come to the conclusion that they are artifacts. The autopsy notes of gross appearances of the cord indicate so plainly that the cord had been severely bruised in its removal that it is surprising that the authors should have mistaken these appearances for congenital malformations. The writers plainly describe the reduced size of the cord in the lower dorsal region, and a deficiency of the cord at the lowermost dorsal portion; yet it does not occur to them that this deficiency was partly caused by the telescoping downward of a segment of the lowermost dorsal region over the lumbar cord, which produced the swollen and voluminous appearance grossly. The sections also show this to be the case. In sections 16, 17, and 18 the shape of the gray horns of the supposed accessory cord on the right side shows that it has been pushed downward from a higher level alongside of the primary cord. The right-hand cord segment in these figures has the appearance of the twelfth dorsal or first lumbar segments, while the left-hand segment, over which the former has been telescoped, corresponds to the third or fourth lumbar segments; so that some of the portion of the cord which the authors supposed to be deficient is the right-hand segment in sections 16, 17, and 18.

The artificial doubling of the cord in this case is remarkably perfect. I have, however, succeeded in one of many experimental attempts in duplicating such appearances. There has always been in these experiments a good deal of distortion of the gray and white matters in both the cord itself and in the telescoped segment. It is very probable that there were deflections of the white matter in these doubled sections of Fürstner and Zacher not indicated in the drawings, which are all on too small a scale to give any satisfactory idea of the artifacts of the white matter.

When we sum up the microscopical features of the other portions of the cord, we find that there are contortions and dislocations of the gray matter, and diverted bundles of white matter running in abnormal directions. These, especially the bands of white matter running collectively or dispersed in a horizontal plane, are characteristic of careless manipulation.

Portions of the text embracing the microscopical examination are not clear as to whether the lesions described were actually due to pathological processes, or whether they were simply due to the minute structural artifacts in the nerve fibers of the crushed areas in the white matter inflicted in the bruising, which we have shown in Section V may simulate very closely some of the lesions of the cord.

Section 4 of this case should be compared with a similar appearance among the experimental bruises shown in Fig. 48, Plate XII.

At the conclusion of the paper the writers briefly allude to a second case of cord deformities of this kind.

4. *Seguin's Case* (25), *1872*.*—This case seems to have been regarded more as a new growth or "myelinic tumor of the cord" than a malformation. The following account of the case is taken from Delafield:

"The patient was a woman thirty years of age. Two years before her death she received a severe blow on the back of the head. After this, first one side, then all of the limbs became paralyzed. From this condition she recovered sufficiently to walk; but, after a short time, she again grew worse, and both arms and legs were paralyzed and contractured. She died of bronchitis. At the autopsy there were found two tumors on the spinal cord within the dura mater.

"The upper tumor was on the anterior face of the cord, just below the decussation of the medulla, and of the size of a pigeon's egg. It was composed of branched connective-tissue cells with many round cells.

"The lower tumor was on the posterior face of the cord at the upper part of the lumbar enlargement. It was of the size and shape of a large flattened cherry. It was composed of portions of two spinal cords fused together, with their long axes parallel to that of the normal cord. There were four patches of gray matter, having the shape of the cornua, containing ganglion cells, and joined two and two by regular commissures, in each of which there was a central canal. These gray portions were surrounded by tissues resembling the white substance of the cord."

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* A description of this case, with drawings, was sent to the *Archives de physiologie* by Professor Seguin in 1872; these were lost by the editors, and the case was not published until Professor Delafield made a note of it in *Post-mortem Examinations and Morbid Anatomy*, New York, 1872, p. 65; and in *Handbook of Pathological Anatomy*, New York, second edition, by Delafield and Prudden. During the past year Dr. Seguin has kindly sent me sections and additional clinical notes for a renewed study of the case.

Remarks.—There were absolutely no symptoms referable to this lowermost tumor, and, from a study of the sections (see Plate XVII, Section V), I can unreservedly pronounce this appearance to be the results of bruising at the autopsy, although no detailed notes about the cord removal are to be had. The duplication, as in the previous case, is remarkably perfect, and is probably exceedingly seldom produced in routine autopsy work.

In Plate XVII, Section V, it can be seen, from the shape of the gray horns in the duplicated portion, that the latter have come down from a higher level in the cord. The duplicating portion corresponds to the twelfth dorsal segment, while the cord itself is from the second lumbar level. In the telescoped segment the white matter is disarranged and crushed, so that the two areas of descending degeneration in the lateral columns, from the cervical lesion, can not be seen. The posterior horns in the transported portion are absent. There is also a large split in the center of the section due to an imperfect apposition of the parts at the time of the blow, or a subsequent shrinking of the softened transported segment. In Fig. 2 (Plate XVII, Section V) there are some fragments of detritus of the white matter clinging to the walls of the split.

From the description, the gross appearances of this cord may have resembled Fig. 18 or 19, Plate VI, Section V.

The cases of Seguin and of Fürstner and Zacher have two points in common, which can be explained very easily by the bruising. In the first place, the two portions of the cord in the duplicated region are from consecutive levels. In Seguin's case the lower part of the last dorsal and the upper part of the first lumbar segments have been telescoped down over the next lower segment—the second lumbar. In Fürstner and Zacher's case these same upper segments and, in addition, perhaps, an upper bit of the second lumbar segment, has been thrust down over the next lower segments—the third and fourth lumbar. Although we could not deny that such a striking sequence of segments might occur in a hypothetical case of doubling of the cord of real congenital origin (there are no genuine cases recorded outside of double monsters), yet we should hardly expect so uniform a sequence of segments in genuine cases of doubling, if they exist at all in adults, as is almost invariably the rule in bruises.

In the second place, both cases of doubling occur at approximately the same levels in the cord—the dorsolumbar junction. The explanation of this coincidence, I believe, is that the cord becomes so much more difficult to remove in precisely this region from the depth and strength of the vertebral arches, that it is hard to accomplish much with the saw, and the chisel, shears, and mallet are used instead. So in this way bruises are more frequent and most extensive in the dorso-lumbar region where the cord is hardest to remove, and among the many bruises inflicted in this region, these two have produced a doubling of the cord.

A striking thing about Seguin's case is that the telescoped portion did not leave any deficiency from whence it came sufficient to have been noted when the cord was exposed. But, as noted before in Section V, the deficiency corresponding to a doubled portion of the cord is often not at all striking to the eye in the fresh condition, for apparently the membranes over the deficient part do not always collapse, so that the cord, in some cases of doubling, may not show any striking deficiency, above or below the doubled region.

No. 5. *Drummond's Case* (26), *1881.*—This case, together with the following one of Bramwell's, is interesting, from the implied suspicion with which the deformities were regarded in relation to pseudo-hypertrophic paralysis before the entirely peripheral nature of this disease was understood. Both of these cords happened to be bruised in being removed from subjects of that disease. Drummond very carefully refrains from commenting on any relation between the deformity and the disease.

The cord was removed from a boy, fourteen years old, who had typical pseudo-hypertrophic paralysis.

The cord had a "swelling or tumor," which bulged out from the anterior part of the left lateral column in the upper lumbar region, which measured nearly a centimetre and a half in length (Fig. 3, *a*). Above, it appeared as a swelling of the ordinary white substance, but below it was bent downward and made an acute angle with the cord.

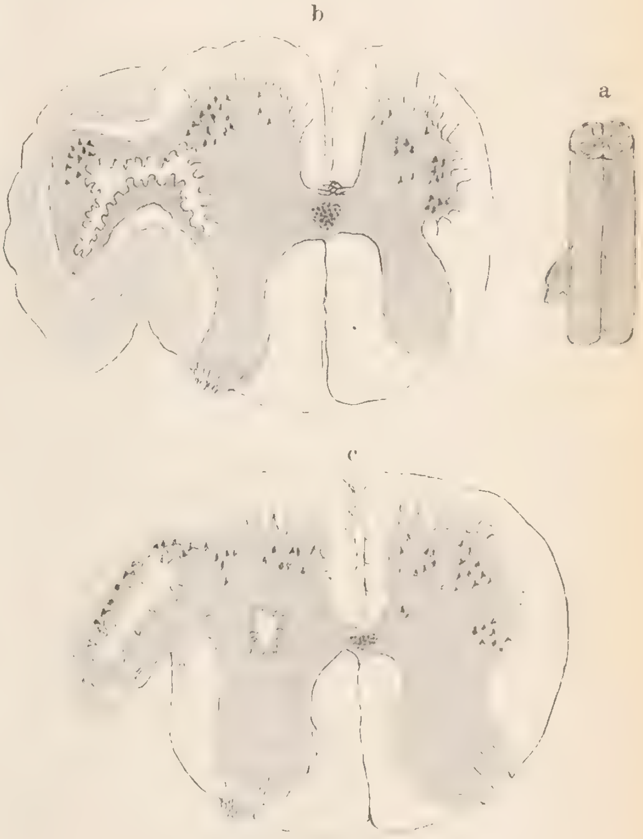

FIG. 3.—Drummond's case.

In making frozen sections through the projecting region of the cord, it was noticed that it was not solid, but consisted of a shell that inclosed some frozen fluid in the center, which disappeared when the section was transferred to water (*b* and *c*). Thus the tumor was cyst-like, having a cavity and a wall of both gray and white matter. While there was disintegration of the gray matter with an accumulation of fluid, *there was no true lining wall of the cyst-like cavity.*

Disintegration of the gray matter of the same nature as shown in Figs. *b* and *c* was also found in the cervical region on the opposite side, but it was not so extensive, and was not associated with any deformity of the cord substances. Drummond's *résumé* of the changes is: "Disintegration in the lateral gray horns, most marked in the lumbar region where the accumulation of serum had caused the cord to bulge out laterally." This observer also very cautiously adds: "I do not mean to assert that this lateral disintegration or tearing was of pathological significance—it might have been due to the manipulation, but I am inclined to think otherwise."

Remarks on Drummond's Case.—Both of the changes in this case—the deformity of the cord substances and the disintegration of the gray matter—are to be regarded as the results of bruising. The absence of any signs of inflammation about the disintegrated areas and the absence of the characteristic structural features of necrosis are not in favor of their having been caused by pathological processes. The whole appearance of the drawings, especially the horizontally deflected nerve fibers in the white matter, indicates that they are mechanical artifacts.

The disintegration of the gray matter described in Drummond's case is the "rarefied" or porous condition which we have frequently shown to be the effect of bruising in the experiments in Section V and in the cases in Section IV. We have found that this rarefied condition of the gray matter as the result of bruising is more liable to occur with the more extensive deformities, and that it may also occur in bruised cords which are hardly deformed at all as described in the cervical region in Drummond's case. This mechanical disintegration of the gray matter may be of varying grades of intensity. It may appear as a separation of the elements of the gray matter, with a disappearance of more or less of the granular basement substance, so that there is a less dense or rarefied appearance of the gray matter; or the artificial disintegration may be more extensive and form an actual cavity. Figs. 5, 58, 59, 60, 61, 64, Section V, are to be reviewed in connection with Drummond's case on this subject of the production of artificial cavities or rarefied areas in the gray matter.

The finding of this condition in the gray matter in frozen section of the fresh cord in this case is interesting, for it shows that the disintegration is more directly due to the mechanical effects of the bruise than to the subsequent action of the hardening fluids on the bruised regions. We had been led to believe that the lesser grades of disintegration were partly due to the bruise, and partly to the subsequent action of the hardening fluids.

Drummond is the only one of these writers on supposed adult cord malformations who is reserved in his conclusions and appreciates the possible artificial origin of these changes. He nowhere speaks of the changes as malformations, and it is singular that he should imply a preference for the view that the disintegration of the gray matter with the production of fluid was the primary condition and induced the deformity secondarily by pouching out the cord substances beyond the periphery, instead of attributing the deformity to the bruise and the disintegration and production of the ragged-walled cavity to the same cause.

In this case the squeezing of the gray matter in the bruising seems to have pressed out a collection of fluid which appeared in the frozen sections.

No. 6. *Bramwell's Cases, 1885.*—Bramwell* cites two cases of congenital malformations of the cord in his work on the diseases of the spinal cord. The first cord came from a case of pseudo-hypertrophic paralysis, and the second is instanced without any history in the section on congenital malformations of the cord.

The first case showed grossly in the middle of the cervical enlargement that the lateral column of the right side was misshapen by a projection or outgrowth measuring little more than half an inch vertically. The surface of the projecting mass (after having been hardened several weeks in bichromate solution) was irregular and disintegrated at its most prominent point and exactly resembled nervous tissue in a state of softening. A distinct fissure was also seen in the lower cervical region, on each side of the cord in the central part of the gray matter.

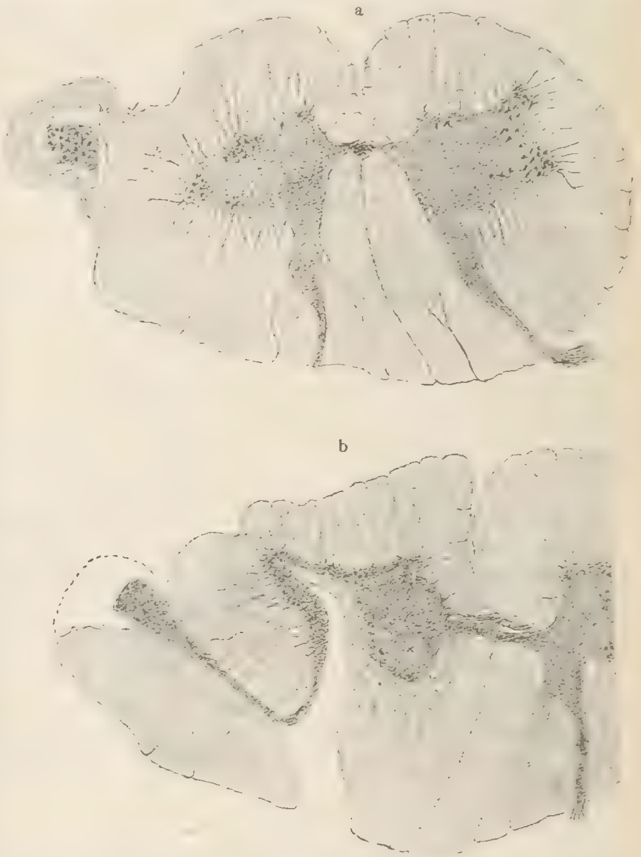

Fig. 4.—Bramwell's first case.

The microscopical appearances are shown plainly enough in the copies of the author's drawings (Fig. 4) to omit their description. A third drawing from this case (not reproduced here) shows a split in the right posterior horn opening to the free surface of the cord. This split is partly filled up with white matter which looks as if it had been driven into gray matter mechanically. The third drawing also shows small splits or cavities in the opposite anterior horn, of the kind described by Drummond.

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* Bramwell. *Diseases of the Spinal Cord*, Fig. 167, p. 334, second edition, 1885.

Remarks.—There can hardly be any doubt that the deformities in this case of Bramwell were produced by bruising. The description of the gross appearances corresponds to a bruise, and the appearances in *a*, Fig. 4, indicate very plainly a mechanical origin of the deformities. This drawing, as well as the third plate of the same case on page 334 of his book, indicates that the force of the blow had split the cord open, or that some cutting instrument had penetrated the cord—either the chisel, or possibly the scissors used to open the dura mater.

The changes in the white matter, such as deflection and crushing of the fibers which are almost invariably incident to these mechanical deformities, seem to have been somewhat overlooked by Bramwell. In describing Fig. 4, *a*, he says that the extra portion of gray matter had an external layer of white matter, "the nerve tubes being concentrically grouped round the central gray mass and running horizontally and not vertically, as the fibers of the lateral column normally do." This horizontal band of white fibers in *a* is quite characteristic of bruising, and it would be an exception to the rule if there were not also similar changes in the white matter in the section, *b*. If serial sections had been made in the region of *a*, a level would have been found, either above or below, showing a deficiency of the gray matter corresponding to the extra gray mass transported to the level of the drawing by the bruise.

Summing up the case, Bramwell says: "This peculiar alteration in the shape of the gray matter, and the outgrowth from the lateral column, were probably, I think, congenital malformations; whether they had anything to do with the production of the disease is very doubtful; it is, however, important to remember that a similar outgrowth from the lateral column was present in Dr. Drummond's case; it is therefore probable that in pseudo-hypertrophic paralysis there is a tendency to congenital malformations in the arrangement of the gray matter and the shape of the cord."

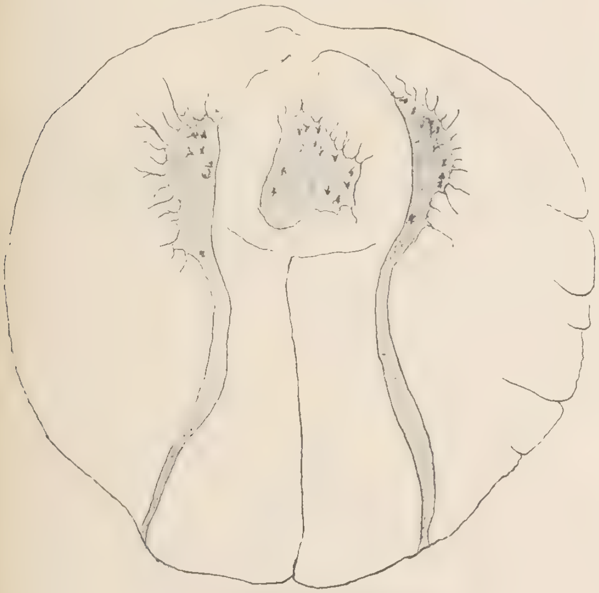

Fig. 5. Bramwell's second case.

The second case, Fig. 5 (page 74 in Bramwell's book), which is simply illustrated in the drawing as a congenital malformation, but is not described in the text, I believe to be a bruise also. Changes in the white matter from bruising, although not indicated in the drawing, were probably present. In the title to the plate the anterior fissure is said to have been absent. (The fissure was probably displaced or obliterated by the bruise.)

No. 7. *Schiefferdecker's Cases* (27), *1887.*—Schiefferdecker found considerable asymmetry of the gray matter both as to form and position in otherwise perfectly normal spinal cords, and this condition had given no symptoms during life. The first instance was in the cord of a dog, Fig. 6, *a*, *b*. Both of these sections show a change of form in the posterior horns, and an irregularity in the volume of the right and left anterior horns. The two halves of the cord were also slightly unequal. Above and below this level the cord was perfectly normal and symmetrical.

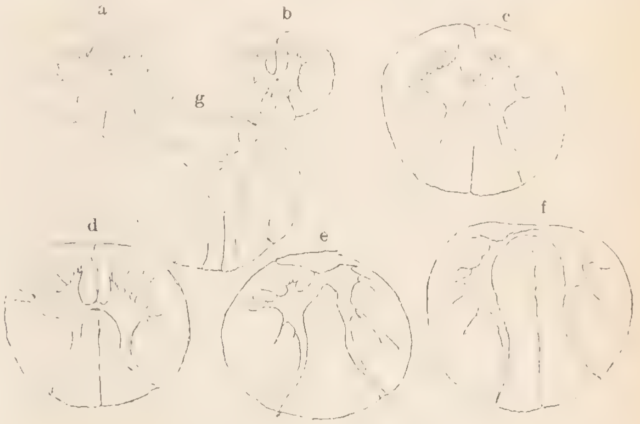

Fig. 6.—Schiefferdecker's cases.

The second case was that of a patient in an insane asylum who had no symptoms of any cord disease, nor symptoms which could be ascribed to the anomaly. The cord membranes were slightly thickened. Fig. 6, *c*, *d*, *e*, *f*, shows plainly enough what has occurred in the cord to dispense with a description of the changes.

Remarks.—Both of these cases are mechanical artifacts. In the first case the mechanical forces were of a mild degree and produced but slight distortions. I have studied quite similar contortions in the cords of dogs and rabbits produced by mechanical means in removing the cord. In Section IV it was shown that the results of bruising a dog's cord resembled quite closely in one or two places the alterations in this case of Schiefferdecker. Fig. 6, *e* and *f*, in the second case are good examples of that rather common result of moderate cord bruising—viz., the central rupture of the cord substances—of which a number of examples are given in the preceding section. Compare Fig. 6, *e* and *f*, of Schiefferdecker's second case with Figs. 40, 41, 43, 44, 46, and 47, Plates XI and XII, Section V.

Schiefferdecker makes a number of anatomical and physiological conclusions from these artifacts and notes that deformities of this kind seem to be confined to a limited region of the cord, not making the slightest reservation as to their artificial production.

No. 8. *Kronthal's First Case* (28), *1888*.—Kronthal describes at length distortions in the cord from a man having an ordinary subacute destructive myelitis.

Secondary or artificial distortions of the cord substances are so obviously liable to occur in the softened or semi-fluid cords of acute myelitis that but little space would be needed for reviewing this paper were it not for the fact that, being the first article to describe this class of distortions associated with acute destructive myelitis, it is quoted considerably and has exerted an influence in favor of error on subsequent writers. Three other papers describing the distortions in myelitis as malformations have followed Kronthal's article. By reviewing all of the preceding instances of malformations of the cord—with one or two exceptions due to artifacts—which quite regularly occurred in cases of spinal diseases, Kronthal attempts to show that these alleged malformations rendered the cord prone to disease.

The cord was taken from a man twenty-two years old, a plumber, who at first had symptoms of chronic lead poisoning, and during the last five days of his illness developed symptoms of acute myelitis which extended up to the neck. At the autopsy the spinal cord showed two centimetres below its upper extremity a region a centimetre and a half long which was almost fluid, and a second similar nearly fluid region two centimetres long situated twenty-eight centimetres below the upper extremity. The rest of the cord was also softer than normal. Four centimetres above the lower spot of softening the cord was abnormally voluminous; its circumference was increased and looked as if a tumor were present The cord was not cut open in the softened places, and these regions were hardened *en masse.*

Kronthal's plates will enable us to dispense with his description of the microscopical features of the contortions, which are described in detail in his paper. Among other things, he believes that there was an absolute increase of the gray matter (some sections contained a hundred ganglion cells, etc.), although sections 3 and 14, Fig. 7, show plainly enough where some of the extra gray matter has come from. Kronthal also interprets the appearances in sections 10, 11, and 12, Fig. 7, as indicating a rudimentary doubled or extra cord, and compares it to the case of Fürstner and Zacher. He does not speak of the artifacts of the white matter very clearly and neglects to indicate them in the drawings. The lesions of myelitis were also found in different stages in the cord. Kronthal dismisses any possibility of manipulation in the production of the deformities, because the cord was not cut open before hardening, and because of the presence of the assumed rudimentary cord.

After reviewing the other causes of bruises, Kronthal sums up his ideas about the proneness of such cords to disease as follows: "It can now be affirmed, considering the last case on record [his own], that we must speak more definitely than formerly and declare that a spinal cord with heterotopia of the gray matter has a diminished resistance to disease."

I have not thought it necessary in the preceding sections to picture or describe the artificial or secondary deformities associated with myelitis. They occur very frequently, their significance is probably generally understood, and it must be generally known that acute myelitis regularly destroys and disfigures the cord substances and generally softens the cord, so that it is hard to remove or handle it without disturbing the topographical relations of the cord matters still more.

One case, however, may be instanced here in connection with Kronthal's case, which shows how a bruise is liable to produce more extensive deformities in a softened cord of myelitis than in a normal or firm cord.

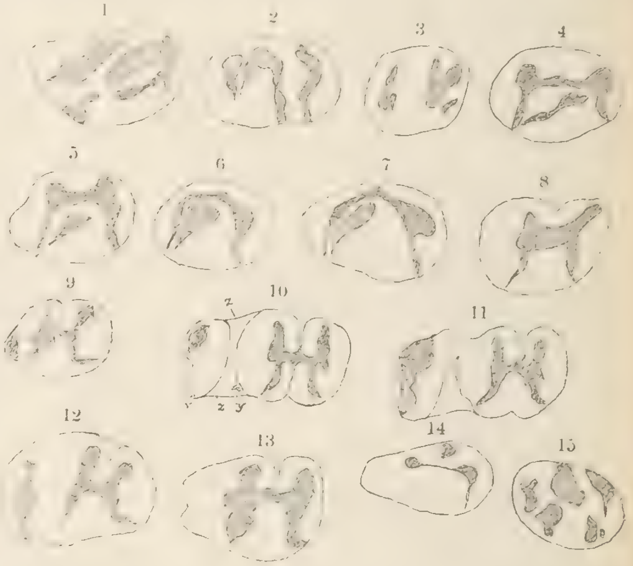

Fig. 7.—Kronthal's first case. Deformities of the cord due partly to acute myelitis and partly to bruising.

This cord * came from a man who died in two weeks with an acute idiopathic myelitis, involving the whole dorsal region. The autopsy was made in very hot weather, and the carefully removed softened cord (which was not incised anywhere) was laid on some finely chopped ice in a pail and carried across the city to the laboratory. During its transit the cord had settled down among the ice fragments, and the jolting of the latter had contused it, as the subsequent microscopical examination showed, in a most remarkable way, although grossly the cord showed nothing very unusual in its contours. Several of the sections from this cord indicate just as grotesquely the mechanical origin of the deformities as sections 1, 3, 14, and 15 in Kronthal's first case, Fig. 7. The white matter in the writer's case of myelitis was so much destroyed by the disease that the usual appearances of bruising of the white matter are not as clear as in bruised normal cords.

It is surprising that these writers, who have described malformations or heterotopia of the cord, associated with acute myelitis, should ignore the fact that the myelitis itself, independent of any manipulation or bruising, deforms and destroys the gray matter. I have removed cords of myelitis subjects with extreme caution to satisfy myself of this, and have found that, where mechanical forces may be almost entirely excluded, there may be distortions of the gray matter as the effect of the disease. It may be repeated that most cords in acute destructive myelitis are in such a soft condition that the slightest touch or handling produces distortions of the cord substances.

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* I am indebted for this specimen to Dr. Brothers, then (1886) house physician at Bellevue Hospital.

Kronthal finally adds a note that the preparation of these heterotopic cords presented great difficulties. The staining was unreliable, and thin sections were hard to obtain. This is all because of the crushed areas of white matter, which get brittle easily and stain somewhat differently from the normal white matter.

No. 9. *Kronthal's Second Case* (29), *1890.*—Kronthal also mistakes a bruise in the cord of an ox for a congenital malformation. The cord came from a butcher's shop. At one point, about one centimetre long, the cord was more voluminous than normal. Kronthal remarks that the rest of the cord was badly damaged by being sawed in two lengthwise, but it never occurs to him that the "anomaly" which he described was also produced by instruments. Sections 1, 2, and 3, Fig. 8, show the appearances of this bruise in the sections. Kronthal also describes the horizontally deflected white fibers usually found in bruises, and queries whether the artificially displaced fibers in section 3 are commissural fibers between the two sets of gray horns, etc. Compare with Fig. 61, Plate XIV, Section V. The author appears to be serious in giving an embryological explanation of the distortions, and thinks that the deflected white fibers pursued a horizontal direction to pass by some obstacle interposed in their path in fœtal times.

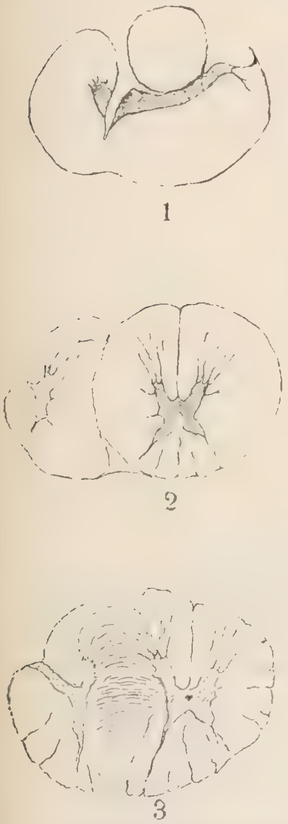

FIG. 8. Kronthal's second case. Artificial deformities in the cord of an ox.

No. 10. *Buchholz's First Case* (30), *1889.*—This writer found an abnormal configuration of the gray matter associated with a corresponding change in the neighboring white matter, in a case of acute delirium. There were no symptoms referable to the supposed malformation. Fig. 9 shows these two sets of changes, which are simply mechanical artifacts. A most characteristic feature of bruising—namely, the deflected bands of horizontal nerve fibers—the author described in detail. (See sections 1 and 2, Fig. 9.) Briefly summed up, the changes consisted in a lengthening out of one or other of the anterior horns, which were in some levels surrounded by horizontal fibers. This condition we have shown to occur quite often when the cord has been cut transversely when fresh and the cord substances have flowed up out of the cut segments. Compare Buchholz's figures—Figs. 5, 6, and 35, Section V.

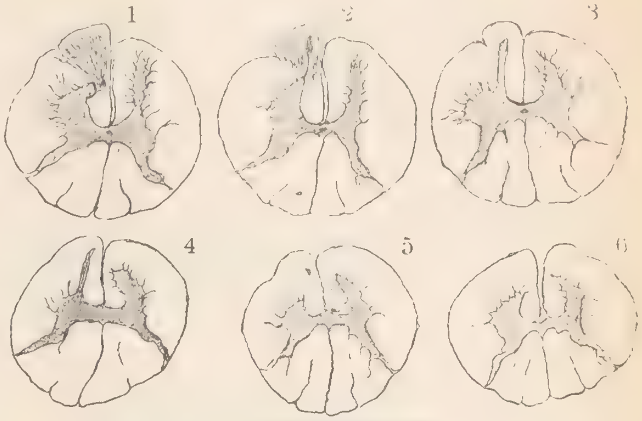

FIG. 9. Buchholz's first case.

Buchholz considered these misplaced fibers as originally vertical fibers ascended from lower regions, which, after turning out horizontally, continued again in a vertical course. A great number of small hæmorrhages were also found in this case. While these were probably associated with the acute delirium during life, they may have also been caused by the bruising. (Compare Fig. 62, Section V.)

No. 11. *Buchholz's Second Case* (31), *1890.*—A second case of supposed developmental anomalies of the cord is reported by the same author, in a case of dementia paralytica, with no symptoms referable to the deformity. Fig. 10 shows the character and distribution of these supposed malformations. There was descending degeneration in the crossed pyramidal tracts. The deformities, especially the deflected columns of white matter which are noted in the text, indicate a mechanical origin of the distortions. The author indorses the opinion of Schultze, Fürstner, and Zacher that such supposed developmental anomalies may form an anatomical substratum for the neuropathic disposition.

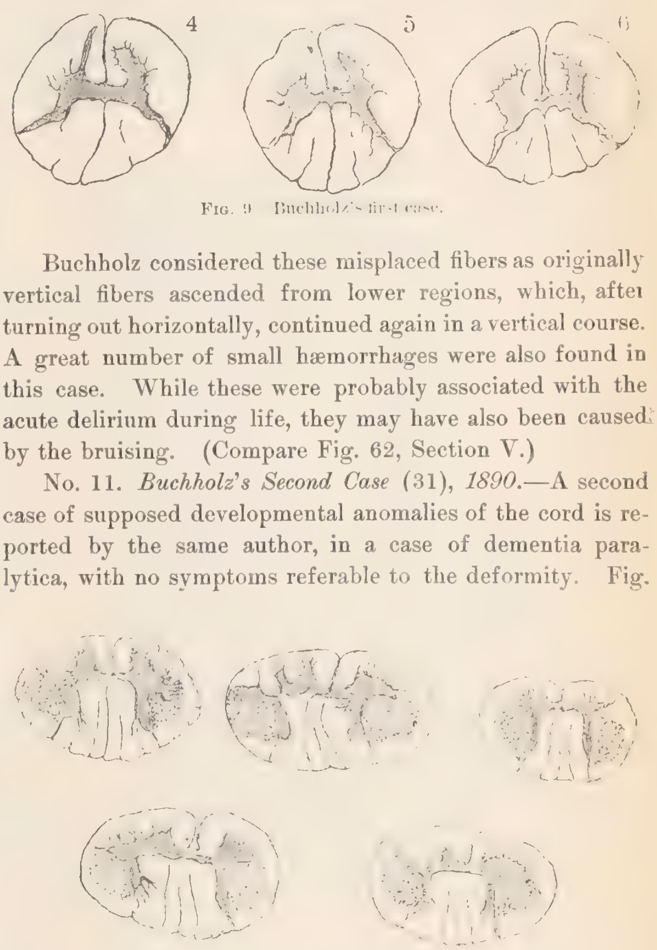

FIG. 10.—Buchholz's second case.

No. 12. *Jacobssohn's Case* (32), *1891.*—Jacobssohn's case is another bruised cord of acute myelitis, like Kronthal's, in which distortions due to the disease or, more probably, to mechanical violence, are described minutely, and supposed to be malformations of congenital origin. (See Fig. 11.) When the cord has been so thoroughly knocked to pieces by bruising as shown in Fig. 11, sections 1, 2, and 3, it is difficult to understand how the appearances can be considered as malformations and the case be published as one of heterotopia. Surely, a cord in the condition shown in sections 1 to 3 could not perform its functions. Jacobssohn also describes a partial doubling of the cord in the lumbar region. Grossly, the cord appeared normal in its contour, except that it was more voluminous than usual in the lumbar region.

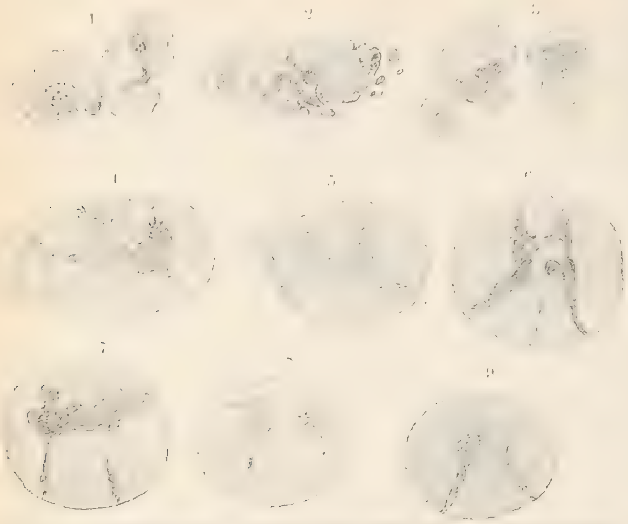

Fig. 11.—Jacobssohn's case. Bruise artifacts associated with acute myelitis.

No. 13. *Brasch's Case* (33), *1891.*—Brasch describes in detail mechanical distortions, as heterotopia, in the cord from a case of syphilis of the central nervous system simulating the symptoms of tabes. (See Fig. 12.)

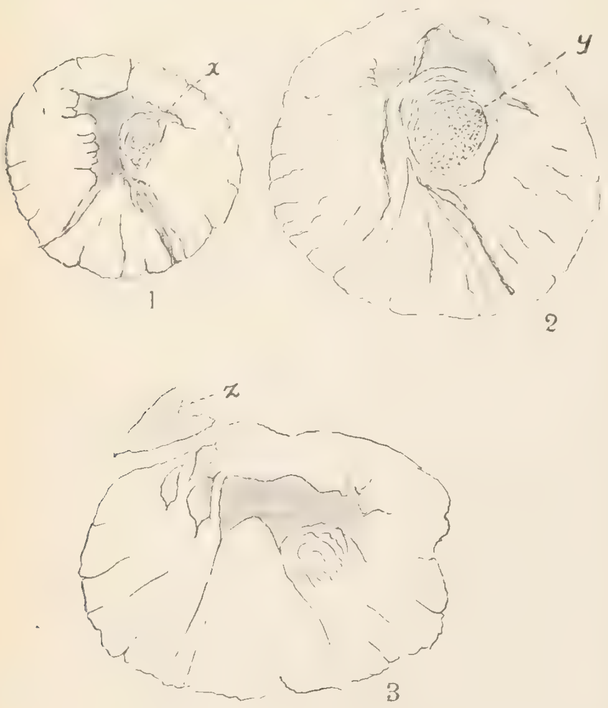

Fig. 12.—Brasch's case.

Remarks.—The cord appears to have been bruised over a considerable territory; a good part of the dorsal region and the lower end of the cervical region show these mechanical artifacts. In the eighth dorsal segment a column of white matter, deflected mechanically, has been thrust into the gray matter, and disfigures the left anterior horn. In the seventh dorsal segment the same bundle of disarranged white fibers has produced a still greater effect on the configuration of the gray matter, and separates the distorted and fused anterior horns from the posterior horns. (See Fig. 12, section 2.) It is interesting to note that the author describes the concentric arrangement of horizontal fibers about the displaced white column shown in Fig. 12. This occurs occasionally in bruises. (See Fig. 15, Section V.) In the cervical region, the splits and clefts described by the author indicate a mechanical origin. Many of the sections showed defects of the cord substances characteristic of severe bruising.

Minute structural changes are also described in the bruised regions, such as irregular degenerations or scleroses of the white matter, which in places were very extensive. Although these structural changes were probably largely caused by pathological processes, or the syphilitic element, one can not feel sure whether the author distinguished rigidly to what extent these minute structural changes were due to the bruising, and to what extent they were actually caused by pathological processes.

We have repeatedly shown that bruises, in addition to the production of topographical changes, may also produce minute structural alterations which resemble closely degenerations and sclerosis of the cord.

When a diseased cord, especially a cord with irregular degenerations or sclerotic patches, is bruised, it becomes a very difficult, if not an undeterminable, question in some cases to tell how much of the minute structural changes are due to disease processes and how much are simply artifacts.

At the conclusion of this paper, Brasch discusses the question of the association of the neuropathic disposition with these malformations, reviews other cases, and intimates that these artifacts make the cord prone to, or less resistant to disease, etc.

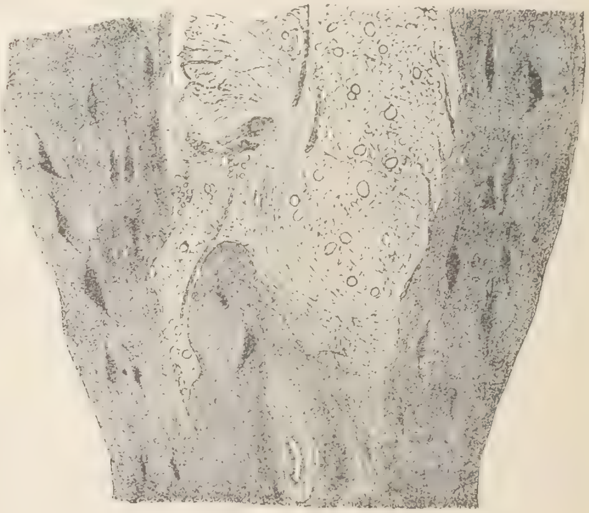

Fig. 13.—Feist's first case.

No. 14. *Feist's First Case* (34), *1891.*—This case relates to a man having typical paretic dementia, who died of sepsis three weeks after a fracture of the arm; there were, of course, no symptoms of the alleged congenital malformations of the cord. Feist describes the various topographical and structural changes in the cord due to bruising with much thoroughness and detail. Wholly unaware of the artificial and mechanical origin of these changes, he considers them preformed, and describes them as anomalies in the course of the fibers of the white matter and partial doubling of the spinal cord. Feist's drawings (reproduced in part here in Figs. 13 to 20 inclusive) are very conscientious, and are by far the best in the literature, because they are on a large scale and show the details of the changes in the white matter so characteristic of bruising. Except Feist, nearly all of the writers who have mistaken bruises of the cord for congenital malformations have paid most attention to the altered topography of the gray matter, and have neglected, both in drawings and text, the details of the changes in the white matter.

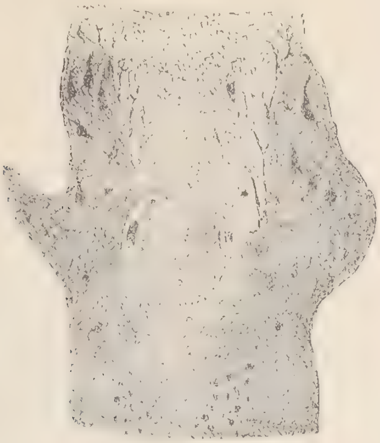
FIG. 14.—Feist's first case.

The anomalous bundles and sets of fibers in the white matter running in abnormal directions, described and illustrated so accurately by this writer, are simply the strands of white matter mechanically deflected by the bruising, of which so many examples are shown and described in Sections IV and V.

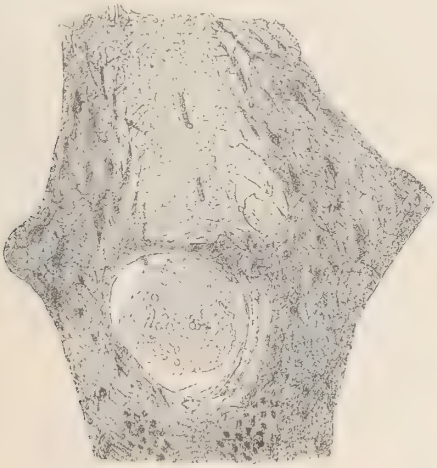
FIG. 15.—Feist's first case.

In the first part of the paper, bundles of artificially displaced white matter passing out horizontally to the periphery of the cord between the two anterior horns (see Figs. 13, 16, and 17) are described as aberrant or anomalous bundles. (Compare with Figs. 6, 35, and 36, Sections IV and V.) Feist at length describes what he supposes to be a curious malformation, consisting in horizontal and vertical bundles of white matter inside of the central canal (open in this case), and inside of the gray commissure (Figs. 14, 16, and 17). In one place, Fig. 14, an "aberrant" bundle passed through a portion of the gray commissure. These supposed aberrant bundles inclosed in the gray matter are simply portions of the white matter which had been driven by the force of the bruise into the perivascular spaces of the sulco-commissural arteries in Figs. 15 and 17, and into the adjoining open central canal in Fig. 16. The sulco-commissural perivascular spaces communicate directly with the cavity of the anterior fissure, and crushed fibers which had been thrust out of Türck's columns into the anterior fissure (as was the case here, see Fig. 13) would naturally be squeezed into these perivascular orifices opening into the fissure, and might also pass into the neighboring open central canal. In some places the crushed fibers have not passed from the anterior fissure to the perivascular spaces in this way, but have reached these spaces by directly breaking through and rupturing the anterior white and portions of the gray commissure, as in Fig. 14.

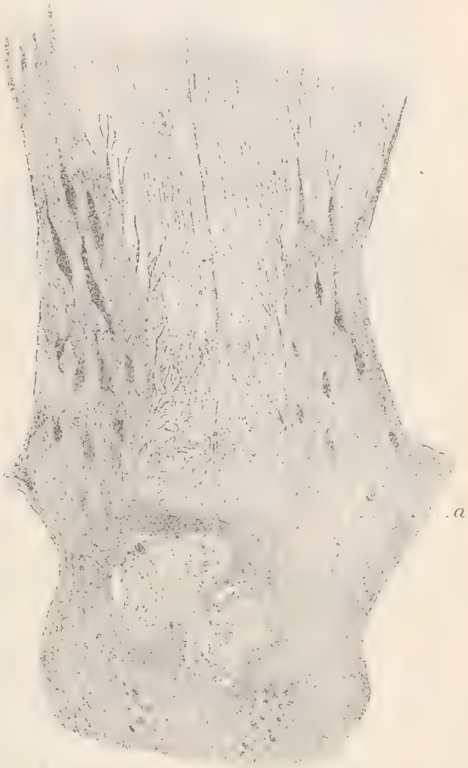

FIG. 16.—Feist's first case.

The forcible pressure of the bruise exerted by these aberrant portions of the white matter is also shown in the manner in which they have squeezed and distorted the central canal in Figs. 14 and 15.

The fact that the sulco-commissural apertures communicate by vertical anastomoses (Adamkiewicz *) makes it not

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* Adamkiewicz. *Die Blutgefässe des menschlichen Rückenmarks*, Part II.

at all remarkable that Feist found the white bundles artificially inclosed in the gray commissure for some little vertical distance. For if the bruised white matter entered these commissural spaces at only one level, it could have been dispersed up or down along these vertical anastomosing sinuses.

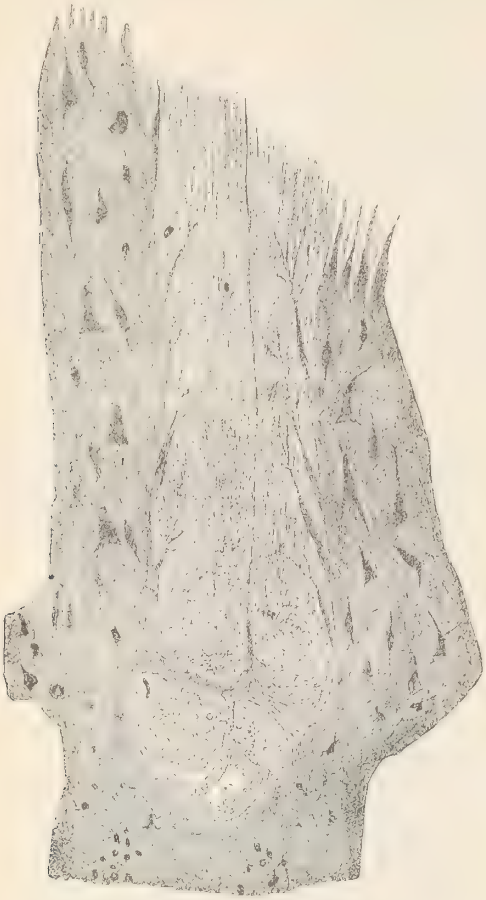


Fig. 17.—Feist's first case.

After describing these supposed aberrant bundles, the author describes the gross and microscopical appearance of a partial doubling of the cord in the same case. Feist considers this doubling of the cord as a congenital malformation, but he is clearly wrong about the matter, and the doubling is nothing more or less than the result of an autopsy bruise of the cord. The microscopical description may be dispensed with. His drawings, copied in Figs. 18, 19, and 20, are substituted for it, and they show plainly enough what has happened to the cord in the way of bruising. It seems advisable, though, to repeat the gross appearances with some detail to show how observers continue to bruise the spinal cord at the autopsy, and describe the results as suggesting tumors, new growths, or structural peculiarities, without appreciating the artificial nature of the changes. Feist describes the appearances as follows :

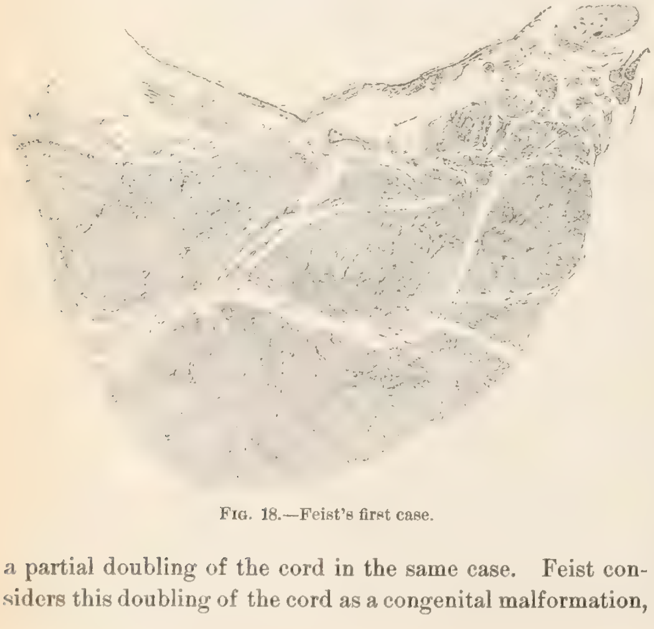


Fig. 18.—Feist's first case.

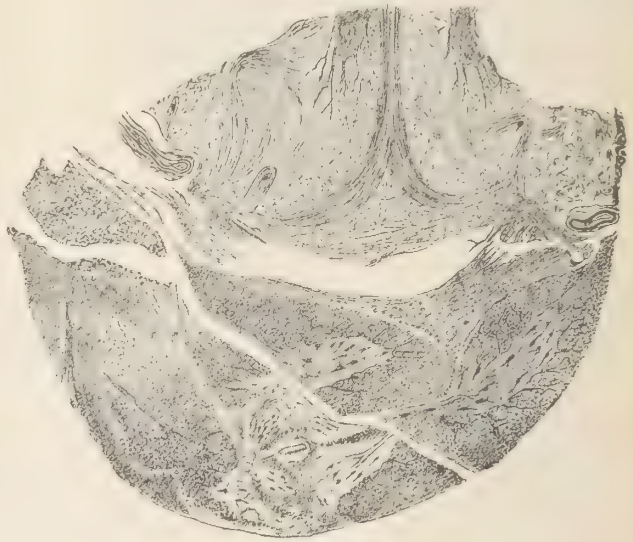


Fig. 19.—Feist's first case.

"Between the exits of the twelfth dorsal and second lumbar nerves a flattened tumor, eighteen millimetres long and eight millimetres wide, lay upon the anterior surface of the cord. The pia mater surrounded the cord up to its junction with the base of the tumor, but did not cover the tumor itself, and I supposed that it was a new growth of the pia mater (gumma or the like) which perhaps had involved the spinal cord. At its proximal end the tumor was firmly adherent to the spinal cord, and presented a compact structure with a lustrous yellowish white surface. Distally, the

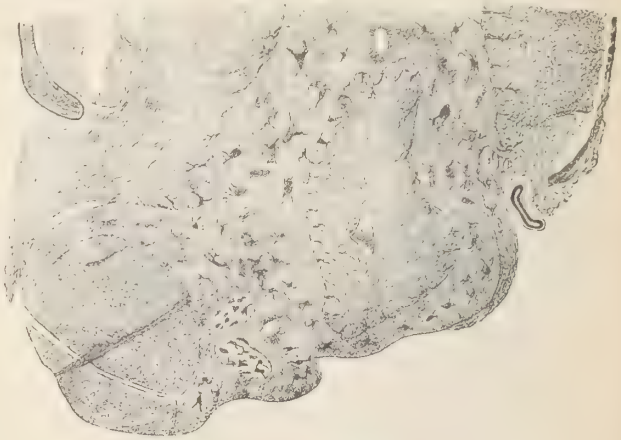


Fig. 20.—Feist's first case

tumor was cleft by several longitudinal splits and was more loosely attached to the pia or cord."

This is a fairly good gross description of a spinal-cord bruise, and the appearances were probably not unlike those in Fig. 17, Plate V. It is somewhat unusual that no deficiency was noticed in the cord, due to the extrusion of the cord substances which produced the tumor-like mass.

Figs. 18, 19, and 20 show the microscopical appearances of this bruised region. The drawings are very faithful in detailing the changes in the white matter, and give a good idea of how irregular these artificial doublings of the cord generally are. There is a helter-skelter fragmentary arrangement of extra portions of gray and white matter, due to the fusing together of different portions of the cord from consecutive levels.

Besides detailing the topographical changes due to the bruising, Feist also gives a commendable description of the minute structural changes in the nerve fibers in the bruised regions. He notes the changes in the myelin and the axis cylinder in the crushed fibers, and the aggregation of certain of the crushed fibers, so that with moderately low powers they looked like finely granular masses. The behavior of these structural artifacts with different staining reagents is also described.

Feist describes very well these minute structural artifacts due to bruising, but he considered these artificial changes in the deflected white bundles as due to a pre-existing degenerative process in the nerve fibers. Bands of neuroglia, which had been squeezed together mechanically in these deflected bundles, are interpreted as neuroglia thickenings and hyperplasias, going hand in hand with the degenerative changes in the nerve fibers.

The finer structural changes in the white and gray matter induced by bruises has probably not infrequently been ascribed to pathological processes by other writers, especially in the literature of cord malformations; but most of the writers describe the artifacts in the white matter so loosely that one can not be positive whether they are describing artifacts or the results of the particular disease for which the cord was removed. Feist's position, however, in this matter of mistaking the minute structural artifacts of bruising for the effects of pathological processes is quite unmistakable. Although his conclusions and interpretation of the cord changes are all wrong, yet compared with the other papers on this subject, Feist's paper is the best in the literature.

No. 15. *Case of Campbell and Turner* (35), *1891.*—These writers describe heterotopia of the cord substances in a case of ordinary transverse myelitis in the lower dorsal region. The authors refer to the comparative rarity of the heterotopic condition and point out the liability to myelitis which this faulty structural arrangement of the cord possessed. The clinical history is interesting. For some considerable time (a year or more) before the myelitis occurred there was apparently some cord lesion which induced constantly recurring trophic changes in the skin, nails, and nearly all of the joints. The myelitis was of the subacute variety and came on gradually.

Remarks.—Notwithstanding the accurate description of the changes in the cord—the writers refrain from making any positive conclusions about the heterotopic condition—this case appears to be quite similar to those of Kronthal and Jacobssohn, in which the destructive effects of the myelitis and the difficulty of handling such cords without bruising them are responsible for the deformities (see Fig. 21). It should be noted that the distribution of the deformities, extending from the sixth to the twelfth dorsal segments, occupied the regions of the cord involved by the myelitis.

No. 16. *Turner's Case* (36), *1891.*—At a meeting of the London Pathological Society, Turner referred to some sections of a rabbit's spinal cord which showed a heterotopic condition. There was an accessory anterior horn, with two central canals, and three anterior nerve roots.

This specimen is described so briefly without drawings that it is impossible to determine anything at all positive about the nature of the deformity. While not denying that there is a possibility that these appearances indicate a real malformation, I am more inclined to believe that the deformities are bruise artifacts. An extra anterior horn is frequently thrust to another level by bruising, and it is possible for a nerve root to be shifted along with the transposed horn. (Compare with Fig. 39, Section V.)

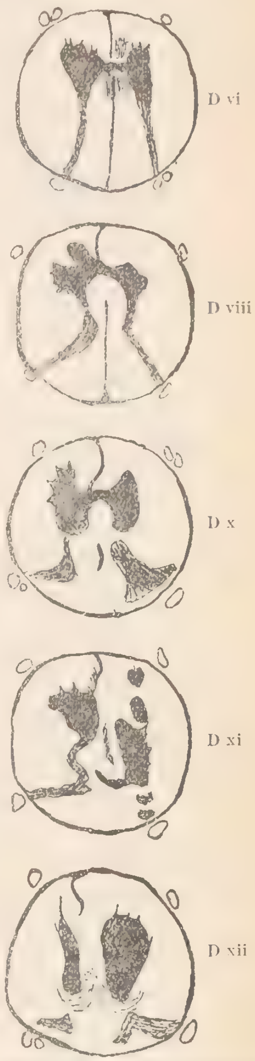


Fig. 21.—Campbell and Turner's case.

No. 17. *Tooth's Case* (37), *1891. Remarks.*—Tooth records deformities associated with acute and chronic inflammatory processes in a spinal cord (removed by some one else) from a man aged twenty-four years who had dementia paralytica. The deformities occupied the whole of the dorsal and portions of the lumbar and sacral regions of the cord (see Fig. 22). Although not explicitly recognizing the artificial origin of the deformities, the author in his excellent report of the microscopical appearances seems to protest against accepting the distortions as malformations, for some of the sections are so described as to intimate an appreciation of the results of mechanical forces. For instance, the gray matter in places is described as having been broken into pieces or moved away from its proper position, and portions of the gray matter looked as if they had been chipped off or dislocated from the gray segments. Tooth also recognizes one or two features difficult to reconcile with the appearances of actual malformations of the spinal cord. For example, the author points out in one place that although the anterior horn had been moved away from its proper position, the entrance fascicles of the corresponding anterior root remained in their appropriate situation disconnected from the shifted anterior horn. At any rate, Dr. Tooth clearly expresses his suspicions of the heterotopic changes as a primary condition in his final paragraph appended below.

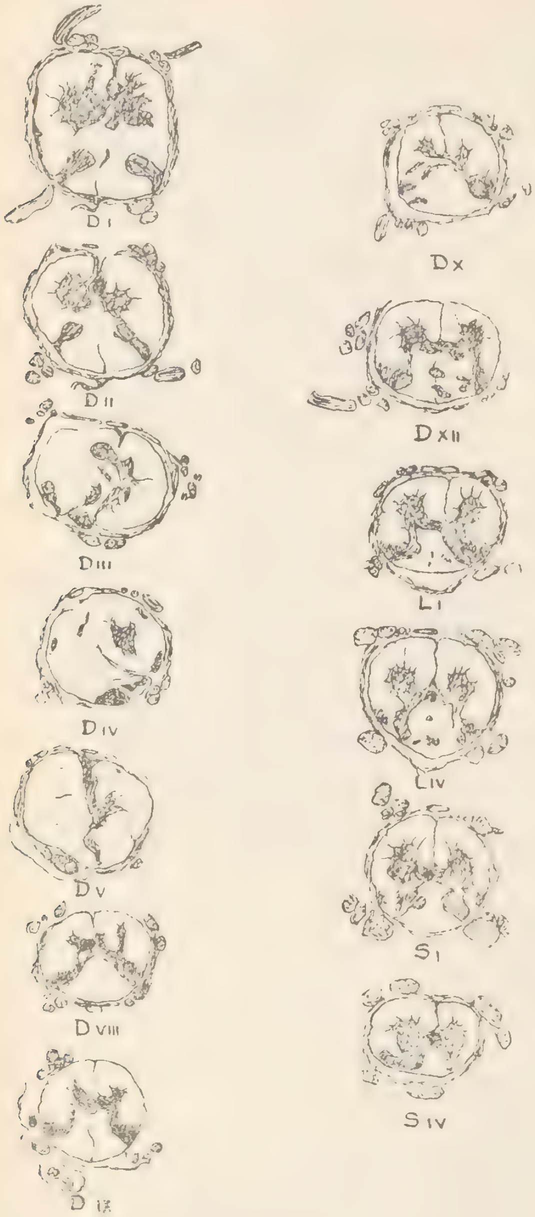


Fig. 22.—Tooth's case.

"The question now arises whether the appearances in heterotopia be secondary to inflammation or whether they existed before as a developmental abnormity, which has since become the seat of acute or chronic inflammation. An inquiry into the diseases to which the recorded cases succumbed does not throw much light upon the subject, except to show that they most of them died of some chronic nervous disease, several from general paralysis. The examination of the cord in the case which is the subject of this communication leads one rather to the conclusion that a widely spread inflammation of the gray matter is at the bottom of the affection."

The deformities in this case were no doubt caused, in part, by the associated lesions, but it is very likely that the bruising or manipulation of the diseased cord was more largely responsible for their presence.

No. 18. *Chiari's Case* (38), *1891.*—This case consisted in a partial doubling of the cord in a very young child having spina bifida, and is very briefly alluded to. In a portion of the lumbar region there were two normal anterior horns, but four well-formed posterior horns which were properly connected with their nerve roots. The increased substance of the posterior white columns was uniformly medullated.

The absence of drawings and definite details of this deformity renders it impossible to draw any conclusions as to the real nature of the changes. The deformity may possibly have been of congenital origin, or it may have been produced readily enough by mechanical means; so it is difficult to know whether to class Chiari's case among the true cases or among the erroneous cases of malformations of the cord. (The case would seem to me to look more like a bruise than a malformation.)

No. 19. *Gyurman's Case* (39), *1892.*—Gyurman, in examination of a case of syringomyelia, describes an additional anterior horn surrounded by extra white matter, fused with the cord on its right lateral aspect. Gyurman describes this as heterotopia, and believes it to be of congenital origin. I doubt the congenital origin of this supposed heterotopic condition, and have selected one of Gyurman's drawings (see Fig. 23) as indicating a bruise of the cord.

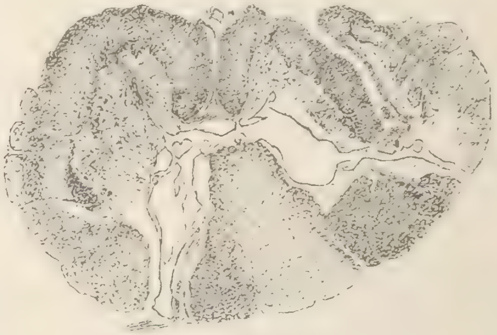
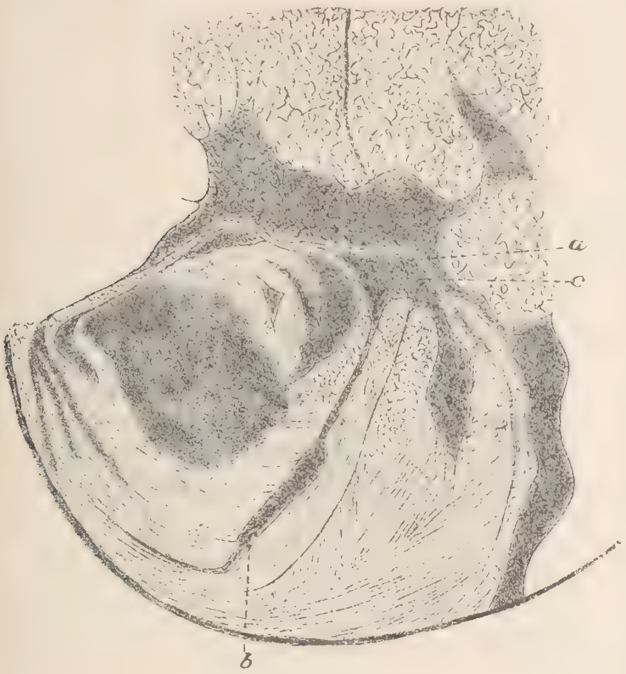


Fig. 23.—Gyurman's case.

No. 20. *Feist's Second Case* (40), *1892.*—In this case are described with the same thoroughness as in the first instance malformations of the gray matter, and "aberrant" bundles of white matter, in the spinal cord of a man aged thirty-eight, who had had fatal general paresis for two years and a half. The case was not complicated by cord disease, except that there was a degeneration of the columns of Goll and a trifling marginal sclerosis. The appended drawings (see Fig. 24), selected from the author's plates, show very faithfully the artificial character of the supposed heterotopic condition.

No. 21. *Köppen's Cases* (41), *1892.*—Köppen cites two cases of "acute formation of cavities in the spinal cord"—one which showed heterotopia of the gray matter. These are reviewed here not to class them positively as erroneous cases, but to suggest that the artificial causes which may have produced both the cavities and the heterotopia ought to be excluded before accepting the ante-mortem origin of the changes.



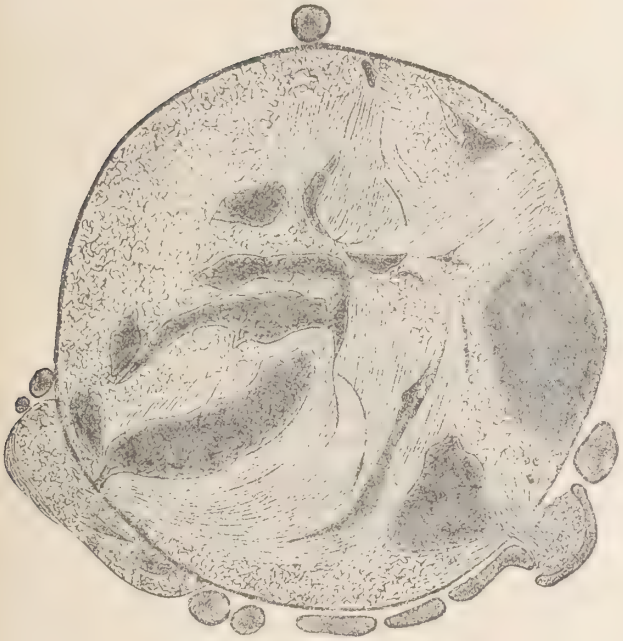


FIG. 24. Feist's second case.

In the first case there was an atrophic paralysis of both legs and a trifling disturbance of sensibility and of the bladder. Shortly before death right ptosis and contraction of the right pupil occurred. The autopsy revealed involvement of the lumbar and to some extent of the sacral plexuses by sarcomatous masses either side of the vertebral column. The spinal cord showed an ascending degeneration of the posterior columns, and in the cervical region a cavity situated in the middle of the gray matter. *The cavity had no lining wall, and was not connected with the central canal.* Larger and smaller hæmorrhages were scattered about in the surrounding gray matter. There were a few changed cells and nerve fibers, but no cell proliferation.

The second case related to a man who had had rather sudden loss of power, and spasms in the legs, trembling in the hands, extensive bronchitis, and progressive insensibility. The cord was normal up to the cervical enlargement. In the upper cervical enlargement *the gray matter showed a congenital anomaly, consisting in the presence of two anterior horns on one side. The lower level of this anomaly contained a torn or ragged cavity in the deformed gray matter.* The anomalous gray matter also showed numerous small hæmorrhages and diffuse infiltrations of red blood cells, but no signs of inflammation.

Remarks.—The author regarded these cavities of acute origin, and believed them due to a hæmorrhagic œdematous softening (?), induced to considerable extent by the cachectic condition of the patients. In case 2 the circulatory disturbances were thought to have been augmented by the heterotopic condition.

I am unable to interpret the "acute cavity formations" of Köppen in any other way than as artifacts. Several very important factors seem to show that there is no proof whatsoever of the cavities having been formed by pathological processes. The cavities had no lining walls or surrounding evidences of inflammation or necrosis, and were not associated with disintegrating neurogliar tumors or hyperplasias. Nor do the symptoms indicate the cavities or correspond very well with their location. In the first case the symptoms are perfectly well explained by the localized lesions of the nerve plexuses. In the second case, also, the correspondence of the indefinite symptoms in the arms with the character and situation of the cavity is not very impressive. Furthermore, in the second case the cavity is most distinctly associated with a palpable bruise-artifact in the duplicated anterior horns on one side of the cord.

Taken altogether, these cavities seem to be quite identical with the holes in the gray matter produced by mechanical disintegration or rarefaction (see Drummond's case), or with the other ragged-walled splits and cavities caused by bruises described in Sections IV and V. The cavities in the bruised spinal cord—Section V (Fig. 15)—should be referred to in connection with these cases of Köppen. The hæmorrhages in the gray matter might also have had an artificial origin.*

This *résumé* includes nearly all of the mistaken cases of artifacts of the spinal cord, and it will be seen that the appearances in the drawings are quite similar to the artifacts shown in the plates of Sections IV and V.

SECTION VII.

THE DIAGNOSIS OF SPINAL-CORD BRUISES.—GENERAL REMARKS.

When the true cases of heterotopia are compared with the erroneous instances, or the results produced by bruising the cord, the contrast is quite striking. In all of the true cases of heterotopia of the gray matter the gray crescents throughout the cord are not misshapen, nor do they show any deficiencies; on the contrary, they are perfectly well developed and have their typical contour and symmetry. The white matter is also undisturbed; the volume and course of its fibers are perfectly regular. There is simply a redundant bit of gray matter (not corresponding to loss of substance elsewhere in the gray horns as in the artificial cases) which was left behind during the development of the gray horns. The rest of the cord has gone on and developed perfectly in every respect. The same may be said of the abnormal tracts of white matter in the medulla; the surrounding structures are perfectly well developed, and the congenitally misplaced bundles of fibers performing their functions properly, reach their prescribed destinations, but have simply strayed away from their customary paths.

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* Köppen's cases are meagerly described in a society report (*Berliner Gesellschaft für Psychiatrie und Nervenkrankheiten*, July 11, 1892), which may express his views incompletely.

This is what would be expected in actual cases of heterotopia, and is in accordance with similar malformations in other organs. It is also perfectly natural in a developmental error of this kind for a few ganglion cells to remain exiled from the parental gray horns, in the residual fragment, as described in one or two of the cases. It will be noticed also, in the true cases of heterotopia of the gray matter, in accordance with the tendency for a complex organ to show preferably developmental aberrations in its lowly organized elements rather than in its more highly organized structure, that the inferiorly constituted tissue of the spinal gray matter—the Rolandic substance—has been most frequently the source of the malformation.

In the artificial deformities there is an entirely different state of affairs. The gray horns are misshapen, and extra or dislocated gray portions can be traced by serial sections to corresponding deficient areas in the gray horns above or below the plane of the section. The white matter is almost always disturbed. The distorted contours of the gray horns and the extra gray portions are generally surrounded or accompanied by mechanically deflected tracts of white matter. If not deflected in various directions in this way, the neighboring white columns are squeezed or crushed together. If there are extra portions of white matter in the section, it is more difficult to trace their source, but the nerve fibers show invariably the effects of mechanical forces. Artificial deformities generally involve a considerable extent of the cord as compared with the actual heterotopic condition, which, as shown by the cases thus far, occupies an exceedingly limited space in the organ. Thus the artificial deformities have distinctive features which enable them to be accurately distinguished from actual cases of malformations or heterotopia.

Some exceptional cases of bruises have less characteristic traits to distinguish them from actual cases of heterotopia or the results of disease.

In rare instances of spinal-cord bruises a tiny bit of gray matter may be displaced some little distance to a nearly normal level with but comparatively little disturbance of the white matter, and it is possible that one or two sections through the upper level will show a nearly perfect contour of the gray segments and hardly any changes in the white matter surrounding the displaced gray fragment. Then the appearances may resemble a true case of heterotopia very closely such as in the first two cases of Pick. Thus, no matter how much a displaced gray fragment may simulate actual heterotopia, serial sections should be made some little distance above and below the suspected level to eliminate artifacts of the white matter and a deficiency in the gray horns corresponding to the misplaced fragment before pronouncing the case one of true heterotopia.

In bruises, as a rule, deflections of the white matter and deformities of the gray matter go hand in hand and are in direct ratio to each other—that is, the more extensive the deformities of the gray matter the more extensive are the mechanical artifacts of the white matter. There are, however, notable exceptions to this rule. A single limited and quite small column of deflected white matter may pass across or indent the gray horns and distort them considerably, and on the other hand there may be quite extensive deflection of the marginal white matter, with but little if any disturbance of the gray horns. In one or two instances of experimental bruises the whole section was perfectly normal in the shape and arrangement of the cord substances, with the exception of a single circumscribed column of deflected white matter.

The influence which actual heterotopic conditions exert over the cord in rendering it prone to disease must be quite inconsiderable. There seems to be no reason why these tiny heterotopic fragments of such infrequent occurrence should not remain indefinitely buried without being resurrected into a significant lesion. Of course, in accordance with the now established hypothesis of Cohnheim, we might regard these tiny fœtal relics as a nidus for the development of tumors. But tumors of the type of the Rolandic tissue are seldom if ever observed; yet, as all of the neural tissues develop from the same embryonic layer, it is possible, though not very probable, for any of the tumors of the glioma group to originate in such heterotopic fragments, for they are generally so poorly supplied with cells and consist so largely of the Rolandic basement substance.

It might seem appropriate to speak further of the neuropathic disposition so much associated with this theme. But it concerns us here only to show that a good deal of unwarrantable responsibility in connection with cord malformations has been shouldered upon the neuropathic disposition. It is finally to be hoped that the recently accumulated and tangible knowledge of the causes of pathological processes may release neural diseases, especially the organic ones, from the speculative dominion of the neuropathic disposition.

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HYSTERORRHAPHY; REMARKS ON APPENDICITIS.*

By ROBERT T. MORRIS, A.M., M.D.

Gentlemen: This first patient has been a sufferer from prolapse and retroversion of the womb, and there are adhesions which hold the uterus so firmly in this position that pessaries would only increase the distress, and Alexander's operation would be wholly useless. The patient has a suspicious pinkish, watery discharge from the uterus, and I now introduce an endoscope and examine the endometrium from the fundus to the external os, but find nothing excepting a benign degeneration of the lining membrane. After removing the endoscope, the uterine cavity is thoroughly washed out with full-strength peroxide of hydrogen to prevent any septic reaction.

The abdomen is now opened above the pubes with the usual incision. I do not like to cut straight through into the abdominal cavity with one sweep of the scalpel, excepting in cases where there are surely no adhesions. In such cases it can be done if one wishes to make a display, because it is as impossible to cut slipping intestine as it would be to cut the top buckshot in a handful.

Adhesions having been separated with the finger, the fundus of the uterus is lifted up with a volsella and scarified along the anterior surface. An opposed portion of peritonæum upon the anterior abdominal wall is scarified in a like manner, and two rows of catgut sutures hold the oozing peritoneal surfaces together. The catgut sutures will be absorbed in two weeks, and by that time the peritoneal surfaces will be as firmly adherent as they ever will be. Permanent sutures do not do what is expected of them by some operators, for, if peritoneal effusion is not strong enough to hold the uterus in its new position, any sutures remaining would cut out as gradually and as steadily as the hands of a clock go around. The abdominal wound is closed by first suturing the margins of peritonæum with seven-day catgut. A row of eighteen-day catgut sutures is next introduced to make a close approximation of the muscular and fibrous tissues. The nice closing of fascia with these sutures is more important than all the rest of the work that we have done, and it is a point that is very apt to be neglected. The final suturing consists in closing the skin wound with seven-day catgut. This patient will not have a hernia after the operation, and it will not be a matter of luck, but a matter of surgical suturing. If any of you have occasion to visit the Hospital for the Ruptured and Crippled, and if you hunt up the truss manufacturers in the city, you can find whole flocks and troops of patients who have hernias following laparotomy where the single-suture method has been employed.

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* An abstract of a lecture delivered at the New York Post-graduate Medical School, June 4, 1892.

The abdominal wound in this patient having been closed, we sprinkle aristol along the line of sutures, and put over it a small handful of bichloride gauze.

Remarks on Appendicitis.—While waiting for the next patient to be prepared, I want to talk a little about the Pandora's box that we carry around attached to our cæcums. I have just come from an operation in which I removed the appendix vermiformis from a patient who was convalescing from one of his recurrent attacks, and this is the second one of the sort in which I have operated very recently at a time when most consultants would have opposed the idea, because the patients were getting well rapidly.

One of the patients was a college professor in the midst of his term's work. He had had numerous previous attacks, but the one from which he was recovering had been the severest of all. He was up and dressed, and my decision to operate was largely based upon the statement of the patient that he had a peculiar sensation of impending disaster. It seemed like taking testimony from superstition, and yet it made me feel as though we ought to take one little peep at his appendix any way. So I opened the abdomen, and found a perforated appendix attached over the bladder by such delicate cobweb adhesions that a single hard sneeze would have pulled it loose and expelled the poisonous contents directly into the peritoneal cavity.

In the other case just operated upon the acute symptoms had all disappeared, and the patient was out of bed. His temperature was normal, and the only remaining symptom was local tenderness over the base of the appendix. In this case the patient had asked his family physician to send for me, because he was sufficiently frightened, and wanted to have the appendix in a bottle of alcohol where it could not explode at any moment and blow his life out. This appendix was found to be walled in with slight adhesions, and jutting out from it, like three small, dark coffee beans, were three gangrenous spots that were just on the point of sloughing and precipitating the patient into a dangerous and perhaps fatal relapse.

Between the present hour and the hour for my lecture next week one hundred fathers, mothers, brothers, and sisters will die of appendicitis here in the United States; one hundred dear ones who might easily be spared to their families will be gone. In some of the cases there will be made the diagnosis of idiopathic peritonitis. It will be thought that others have pyosalpinx, or a "severe bilious attack," or typhoid fever. In some of the cases in which the proper diagnosis can be made the consultants will be in favor of waiting a little while, and in others they will hope that pus will escape by way of the rectum or vagina. By the way, it may be well to say that we now know that idiopathic peritonitis means, as a rule, one of three things—appendicitis, pyosalpinx, or imprisoned gall-stones.

The question as to when to operate in appendicitis cases will be very quickly decided by me when I have an attack myself. I shall have but one attack, and the time for operation will be in the first good daylight that my surgeons can get after the diagnosis is made. Think of all the valuable members of our profession who have recently died of appendicitis, because they called in old friends to sit in judgment, and the friends delayed operation because sympathy had disabled their judgment. Professor B. G. Wilder, the eminent anatomist and biologist, has proposed that the appendix vermiformis be removed from children, just as we vaccinate them. Isn't that radical enough? It will not be done though. Such a procedure would save thousands and thousands of lives and would be truly scientific in character; but prejudice would be against it, of course. And wouldn't prejudice be triumphant with flying colors when it came to a question as to whether "our fat healthy Johnnie" should have his little appendix cut before it could make him any trouble?

When attacks of appendicitis begin, however, it is time to operate. If I were living at a distance from surgeons who are familiar with abdominal surgery, I would rather depend upon expectant and palliative treatment and run the risk of successive attacks, perhaps, but here in New York never! There is a grand fallacy lurking among the statistics of physicians who oppose operative treatment, and it lies right here. A patient has nineteen attacks of recurrent appendicitis in nineteen years in the hands of nineteen physicians, and he recovers each and every time. After a while the twentieth attack comes, and when he is moribund and just passing away a surgeon is called in and the patient dies. Statistics, nineteen to one in favor of expectant treatment.

But, thanks to recent active investigation upon the subject, the tendency is now toward early safe operations as soon as the tricky appendix has shown its hand. The uncertainties of uncertain methods of treatment are giving way to the certainties of new surgery. I would rather trust a mediocre surgeon than a mediocre appendix this year. Perhaps last year the decision would have been different.

We have learned that cases of appendicitis are almost wholly of catarrhal origin, and the myths of fish-bone and grape-seed cases have pretty nearly disappeared under the post-mortem statistics of men like Treves and Fitz and Biggs. The trouble appears principally in people who are subject to catarrhal diseases, and especially where the intestine is inclined to be involved. The anthropoid apes have an appendix vermiformis of such length and shape that if these apes were subject to catarrh of the intestines, it would seem that they were a doomed tribe. When catarrh of the appendix has caused the little tube to swell until it is hard and rigid, the circulation is limited or cut off and then the trouble begins. If gangrene does not occur and cause perforation, the lymph which is thrown out by the irritated peritonæum makes usually a temporary area of dullness which disappears under poultices.. When, however, perforation occurs, the wall of lymph is, as a rule, broken down by the hosts of micro-organisms and Nature sets up another protecting wall farther away, and this process may continue until the old walls have turned into pints of horribly fœtid pus and *débris*. The patient is not always fortunate if this pus breaks through into the intestine and escapes by way of that channel, for a large septic cavity remains and the case may go on to a fatal termination. In one of my cases last winter the family of the patient and the family physician thought it lucky that the abscess had emptied by way of the vagina an hour or two before my arrival; but the later history of tedious septicæmia showed that it would have been a wise and conservative policy to open the abdomen and remove *débris* after the abscess had emptied itself. In some of my early cases of appendicitis with large abscesses I simply evacuated the contents of the cavity and treated the interior antiseptically until it healed; but that was wrong, as I will explain later, even though in accordance with standard authorities. The plan that I have adopted for this year's work is about as follows: An incision is made through the abdominal wall in a line parallel with the middle line, but far enough to the right to lie over the normal base of the appendix. The incision through peritonæum need not be more than an inch and a half in length for removing an appendix that is not walled in with lymph. When we have masses of lymph or abscess cavities about the appendix, an opening must be made large enough so that we can work by sight. Especially is this necessary in the cases in which there are multiple abscesses. To prepare for working by sight the patient must be placed in Trendelenburg's posture—a posture that is so invaluable for this sort of work that it is morally wrong to do the work in any other. With the patient in Trendelenburg's posture the surgeon can deliberately separate adhesions and clear out pus with peroxide of hydrogen as he proceeds in such a way that the intestines are hardly disturbed at all and the field of work is kept sterilized and finishing touches are all made with perfect satisfaction to the surgeon. The anxiety that is spared me now that we have peroxide of hydrogen and Trendelenburg's posture for the patient's benefit is not to be described in words.

The appendix, having been freed from adhesions, is lifted up with a forceps, its mesentery is ligated, and then the appendix is snipped off so close to the base that none of the miserable tissue is left to make further trouble. The collar of mucous membrane that protrudes is easily ligated, and the next step is to invert what is left of the stump so that cæcal peritoneal surfaces fall together, leaving a narrow button-hole slit to be closed. An extremely important step next in order consists in thoroughly scarifying the peritoneal margins of the button-hole before they are approximated with sutures. In my experimental work in intestinal surgery with animals I have frequently found that after an aseptic operation the peritonæum did not become excited enough to protect itself, and there were adhesions only at the immediate points where sutures were placed. Scarify peritoneal surfaces thoroughly whenever it is important to obtain firm peritoneal adhesion, and after suturing sprinkle aristol over the suture line.

In closing the abdominal wound after appendix operations I first suture peritoneal margins together in order to prevent properitoneal hernia, using seven-day catgut for the purpose. The next tier of eighteen-day catgut sutures is so placed as to make a very nice approximation of the margins of the dense aponeurosis of the transverse and oblique muscles. A third tier of sutures of the same sort closes the margins of superficial fascia, which in this region is an extremely important element in the abdominal wall. The superficial fascia is so thick that one who is in a hurry might easily become confused and suture aponeurosis of one side of the wound to fascia of the other side, thereby leaving a weak spot in the patient's abdominal wall, something like a geological "fault" in appearance. I would call your attention to this point as earnestly as I try to impress the importance of Trendelenburg's posture, scarification of cæcal peritonæum, and the use of peroxide of hydrogen. I know of no other operation in surgery in which a faulty technique jeopardizes the patient's chances at so many points, or where a good surgical technique brings greater credit to our scientific work.

The fourth tier of sutures is composed of seven-day catgut, and it closes the skin wound. The dressing of the wound is completed with aristol and bichloride gauze.

Cancer "Cures."—"The announcement of an exposure by a committee of medical investigators of the Count Mattei cure for cancer is satisfactory. The faith in the alleged remedy was probably very shallow, and those who believed in it will be quite capable of disbelieving in the exposure. Evidence to those who believe in cancer "cures" by pretenders and dealers in secret remedies is very much thrown away. Even if one fraud is exposed another will quickly take its place. The fresh spurt of energy in a newspaper announcement of a provincial remedy is probably to be explained on this principle. The public in these matters is willing to be deceived. It can not await the slow development of regular medicine. The serious thing is that both in the Mattei business and in others medical men are involved whose professional qualification gives color to the pretension. It will be interesting to see how a certain journalist will take the Mattei exposure. The remedy was accorded a publicity by this gentleman, to which no doubt it owed a certain amount of success. Credulity is not a very safe quality in a journalist, however well meaning and benevolent; but the very least we can expect from him will be that he will give a cordial publicity to the exposure, exhibit some improvement in the critical faculty, and not lightly again lead the public into the indulgence of false hopes of impossible results from distilled water."—*Lancet.*

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LARYNGECTOMY.

Dr. J. Solis-Cohen has published in the *Maryland Medical Journal* for July 16th a report of the successful removal of a larynx for malignant disease. The case had been under the observation of laryngologists for about twenty years, and Dr. Lefferts had reported upon it in 1876 concerning his removal of a large papilloma by an intralaryngeal operation. After ten years of comparative freedom from discomfort, a recurrence of painful symptoms began and the case grew worse until, in January last, the patient applied at the dispensary of the Jefferson Medical College. After a preliminary tracheotomy had been performed, operations with forceps and by other means removed parts of the tumor, which at the time was held by the microscopists who examined the specimens to be sarcomatous. These operations improved the patient's condition temporarily only, and extirpation was proposed. The patient consented, and on April 1st the radical procedure was undertaken. The incision was everywhere made through healthy structure. The diseased skin and adjacent morbid tissues were circumscribed by elliptical incisions through the sound skin, these latter being carried gradually deeper until with the fingers the larynx could be separated from the underlying parts. A tampon cannula resembling Trendelenburg's was then substituted for the ordinary cannula. Anæsthesia by chloroform was continued through the substituted cannula, as it had before been effected through the simple cannula. The larynx was cut away, sparing the œsophagus entire, going down to the first ring of the trachea. The soft parts were brought loosely together with sutures, leaving a space at the upper portion of the wound for the insertion of a soft-rubber stomach-tube. The operation occupied an hour. Dr. Solis-Cohen remained with his patient for sixteen hours, and otherwise insured an unceasing watch over the case for several days. Two members of the staff spent eight hours with the man, and during that period saved his life twice, death by suffocation from clogging of the cannula with mucus being imminent. The close attention given the case for eighty hours by the hospital attachés insured the man's survival from the dangers of the operation. The œsophageal tube did not appear to be necessary and was removed on the third day. Enemata were used for four days, when gradually feeding by the mouth was resumed. Recovery was uninterrupted.

No attempt has yet been made to introduce a voice-tube, for two reasons: first, no such tube has been at command; second, the indications are imperative, in the mind of the surgeon, to keep the wound free from all possible sources of irritation until the question of the recurrence of the growth has been answered. Of the nature of the tumor removed the author does not speak positively, but it is evident that he inclines to the belief that it was no longer benign in character at the time of its removal. The reports of the microscopists are not in full harmony. The author believes that an interval of some years occurred between the date of the removal of the papilloma and that of the malignant development on the site of the old cicatrix. He draws not a few instructive deductions from the course of his case, but we have space only for the following: "There is one clinical point which has been a revelation to me—that is, the freedom from pain, from cough, and from dysphagia. Should there be no recurrence in this case, we have every reason to be satisfied with the result. Should recurrence ensue, the patient will have been relieved from suffering for some time." The patient is now wearing a single rectangular tube with a very slight amount of paraphernalia.

At the German Surgical Congress, held in June, Dr. Julius Wolff was able to present a patient who had undergone the operation for relief from carcinoma. After other surgeons in Berlin had refused to take the case, Dr. Wolff had done the operation, and, by the kind assistance of Du Bois-Reymond, an artificial larynx had been constructed. With it the patient could not only speak, but even make some attempts at singing.

MINOR PARAGRAPHS.

THE LONDON POST-GRADUATE MEDICAL SCHOOL.

The prospectus of the winter term of this school has been received. The course extends from October 10th to December 3d, and will comprise a hundred and twenty-eight lectures and demonstrations. The fee for a full course is about eighty dollars. The new feature this year is the introduction of lectures on gynæcology and obstetrics by Dr. Braxton Hicks, Dr. Amand Routh, and others. Mr. Jonathan Hutchinson has added to other duties clinical instruction at the Central London Sick Asylum, where he will be joined on the surgical side by Mr. Bryant and Mr. Timothy Holmes. On the medical side clinics will be given by Sir Alfred Garrod, Dr. Ord, and Dr. Wilks. Among the names of other instructors appear those of Gowers, Kidd, Victor Horsley, Arbuthnot Lane, Brudenell Carter, Barlow, Sturges, and Louis Parkes.

ALLEGED FRAUDULENT DISPENSARIES.

In accordance with a call signed by thirty physicians of the down-town east-side district of New York, a meeting of the profession of that part of the city was held last Saturday evening at No. 200 East Broadway, to confer as to measures for eradicating so-called free dispensaries for the poor where, says the call, "the poor and ignorant are deluded and swindled."

A MEDICAL HOME.

An admirable example has been set by the municipal council of Buda-Pesth by subscribing 15,000 gulden toward the building of a house and home for the medical societies of that town.

ITEMS, ETC.

The American Electro-therapeutic Association.—At the recent annual meeting officers for the ensuing year were elected as follows: Dr. Augustin H. Goelet, of New York, president; Dr. William F. Hutchinson, of Providence, and Dr. W. J. Herdman, of Ann Arbor, vice-presidents; Dr. M. A. Cleaves, of New York, secretary; Dr. R. J. Munn, of Savannah, treasurer; and Dr. Willima J. Morton and Dr. Robert Newman, of New York, Dr. G. Betton Massey, of Philadelphia, Dr. Charles H. Dickson, of Toronto, and Dr. J. H. Kellogg, of Battle Creek, members of the executive committee. The next meeting is to be held in Philadelphia, beginning on the Tuesday after the meeting of the Pan-American Medical Congress.

The Tri-State (Georgia, Alabama, and Tennessee) Medical Society will hold its fourth annual meeting in Chattanooga on Tuesday, Wednesday, and Thursday, the 25th, 26th, and 27th inst., under the presidency of Dr. W. E. B. Davis, of Birmingham, Alabama.

Changes of Address.—Dr. T. R. French, to No. 150 Joralemon Street, Brooklyn; Dr. W. P. Worster, to No. 120 West Forty-ninth Street.

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from October 2 to October 8, 1892:*

White, Robert H., Major and Surgeon, is relieved from duty at Fort Myer, Virginia, to take effect on the expiration of the leave of absence granted him, and will then proceed to report in person to the commanding officer, Jefferson Barracks, Missouri, for duty.

Caldwell, Daniel G., Major and Surgeon, is relieved from duty at Jefferson Barracks, Missouri, and will report in person to the commanding officer, Madison Barracks, New York, for duty at that post.

Gorgas, William C., Captain and Assistant Surgeon, is relieved from duty at Fort Barrancas, Florida, and will report in person to the commanding officer, Fort Reno, Oklahoma Territory, for duty at that post, relieving Captain John L. Phillips, Assistant Surgeon. Captain Phillips, on being relieved by Captain Gorgas, will report in person to the commanding officer, Fort Myer, Virginia, for duty at that post.

Turrill, Henry S., Captain and Assistant Surgeon, is relieved from duty at Madison Barracks, New York, to take effect on the expiration of his present leave of absence, and will report in person to the commanding officer, Fort Riley, Kansas, for duty at that post, relieving Major John Van R. Hoff, Surgeon. Major Hoff, on being relieved by Captain Turrill, will report in person to the commanding officer, Fort Columbus, New York, relieving Major Johnson V. D. Middleton, Surgeon. Major Middleton, on being relieved by Major Hoff, will report in person to the commanding officer of the Presidio of San Francisco, Cal., for duty at that post.

Woodhull, Alfred A., Major and Surgeon. The leave of absence granted is extended ten days.

Powell, Junius L., Captain and Assistant Surgeon, is relieved from duty at Fort Randall, South Dakota, to take effect upon the final abandonment of that post, and will then repair to Fort Monroe, Virginia, and report in person to the commanding officer of that post for duty.

O'Reilly, Robert M., Major and Surgeon, will be relieved from duty at Fort Logan, Colorado, and will report for duty as Attending Surgeon in this city on December 15, 1892.

Town, Francis L., Lieutenant-Colonel and Deputy Surgeon-General, is relieved from duty at the Presidio of San Francisco, Cal., and will report in person to the commanding officer, Fort Porter, New York, for duty at that station.

Chapin, Alonzo R., Captain and Assistant Surgeon, is relieved from duty at Fort Yates, North Dakota, and will report in person to the commanding officer, Fort Hancock, Texas, for duty at that station

Swift, Eugene L., Captain and Assistant Surgeon, is relieved from duty at Fort Grant, Arizona Territory, and will report in person to the commanding officer, Fort Yates, North Dakota, for duty at that station.

Koerper, Egon A., Major and Surgeon, is relieved from duty at Fort Walla Walla, Washington, and will report in person to the commanding officer, Willets Point, N. Y., for duty at that station, relieving Major Clarence Ewen, Surgeon. Major Ewen, on being relieved by Major Koerper, will report in person to the commanding officer, Fort Walla Walla, Washington, for duty at that station.

Society Meetings for the Coming Week:

Monday, *October 17th:* New York Academy of Medicine (Section in Ophthalmology and Otology); New York County Medical Association; Hartford, Conn., Medical Society; South Pittsburgh, Pa., Medical Society; Chicago Medical Society.

Tuesday, *October 18th:* New York Academy of Medicine (Section in Theory and Practice of Medicine); New York Obstetrical Society (private); Medical Societies of the Counties of Kings, St. Lawrence (semi-annual), and Westchester (White Plains), N. Y.; Ogdensburgh Medical Association; Hunterdon, N. J. (Flemington), County Medical Society; Baltimore Academy of Medicine.

Wednesday, *October 19th:* New York Academy of Medicine (Section in Public Health and Hygiene); Harlem Medical Association of the City of New York; Northwestern Medical and Surgical Society of New York (private); Medico-legal Society; New Jersey Academy of Medicine (Newark); Philadelphia County Medical Society.

Thursday, *October 20th:* New York Academy of Medicine; Brooklyn Surgical Society; New Bedford, Mass., Society for Medical Improvement (private).

Friday, *October 21st:* New York Academy of Medicine (Section in Orthopædic Surgery); Baltimore Clinical Society; Chicago Gynæcological Society (annual).

Saturday, *October 22d:* New York Medical and Surgical Society (private).

Proceedings of Societies.

AMERICAN ORTHOPÆDIC ASSOCIATION.

Sixth Annual Meeting.

(*Concluded from page 389.*)

Experiments demonstrating the Ætiology of the Various Deformities in Hip-joint Disease.—Dr. A. M. Phelps, of New York, read a paper thus entitled, and by means of dissections, photographs of dissections, and a manikin explained the conclusions that he had drawn from his experiments regarding the causation of the various deformities observed in hip-joint disease. Hitherto it had been generally considered that pressure of fluid in the joint caused the deformity of the first and second stages, and that the rupture of the capsule and escape of the fluid resulted in producing the deformity of the third stage—viz., adduction, inward rotation, and flexion. The author did not think that this theory explained the conditions, because in not a few cases of extracapsular disease the same deformity was present as was observed where there was a serous effusion in the capsule.

As the result of extensive clinical observation, he had reached the following conclusions: (1) That flexion always preceded adduction or was associated with it; (2) that adduction and outward rotation were always present in the second stage without any exception; (3) that when the limb was flexed beyond an angle of 40°, and frequently before this, the deformity rapidly changed to abduction and inward rotation, and that with very few exceptions this occurred independently of the existence of fluid in the capsule.

The author then proceeded to show by his dissections that when this flexion occurred the action of the various muscles around the hip joint was so changed that the deformity of the third stage was the result. The next step was to show that when the limb was slightly rotated outward, flexed, and abducted, the Y ligament was relaxed and pain relieved, and that when the limb was in this position, the muscles being affected by spasm, there was no antagonism of the extensors, flexion occurred, and when it went beyond 20° the muscles which were antagonists acted with the internal rotators.

Dr. L. A. **Sayre** said that the dissections seemed to prove the author's position conclusively, and at any rate his explanation far surpassed any before offered.

Dr. **Whitman** did not quite understand how outward rotation caused diminished tension on the joint, and he would also like an explanation of the psoas contraction of Pott's disease, in which there was the same flexion of the leg but without the deformity of the third stage.

Dr. **Lovett** was satisfied with the author's explanation, but thought his so-called "erratic forms" really made up a fair proportion of all cases.

Dr. **Judson** had always explained the existence of deformity satisfactorily to himself by supposing that the limb took whatever position gave the most freedom from pain.

Dr. **Ridlon** thought the explanation was defective as regarded the exceptional deformities, for the author assumed the existence of extensive bone destruction, which certainly was not uniformly present in such cases.

Dr. **Park** would explain the various deformities on the hypothesis that, in proportion as the focus of disease was nearer to one side or the other, the group of muscles nearest this center of disturbance would become the most contracted.

Dr. **Myers** thought Dr. Ridlon's criticism a very just one, and, even admitting that the muscles acted in the manner described in the paper, nothing had been said as to how the power of the various muscles had been calculated.

Dr. **Taylor** expressed his admiration of the beautiful demonstration that had been given, but its very simplicity led him to feel rather doubtful as to whether this theory was capable of explaining all the phenomena. Personally, he inclined to the theory that these deformities were due to reflex phenomena, and not to the voluntary modification of the tonicity of the muscles as suggested by Dr. Judson. The fact that these deformities were equally well marked whether the patient was walking or in bed would seem to confirm this view. He could only accept Dr. Phelps's theory in a general way, subject to further modification.

Dr. **Ketch** said that all the hypotheses that had been presented before depended largely upon their author's special idea of the pathology of hip-joint disease. To his mind, the mechanical theory came much nearer the truth than that which supposed the deformities to depend upon the location of the disease.

Dr. R. H. **Sayre** thought the author's explanation of the causation of the deformity of the first stage was very similar to the German theory of the distention of the joint with fluid, and it certainly did not explain why in some cases there was at an early stage very little flexion with very marked eversion, while in others there was marked flexion and but little eversion. And he could not accept the hypothesis that the deformities depended upon the location of the diseased foci, for in the knee joint the focus might be in either condyle or in the patella without altering the position of the limb. He also agreed with those who had already spoken against the assumption that there must be extensive bone disease in the cases of erratic deformity, for this was opposed to his clinical experience.

Dr. **Steele** was not disposed to accept the theory propounded in the paper; he inclined rather to the view that the patient voluntarily assumes the position of greatest ease.

Dr. **Phelps** said that his paper, being only a preliminary one, did not purport to present a complete solution of all the problems connected with joint disease. He had assumed the existence of extensive bone destruction in certain cases, because in those cases of this class which he had met with excision had been performed, and had shown this to be the actual condition present. All that he could say in answer to Dr. Whitman's first question was that he had never seen a case in which there was only outward rotation. When a psoas abscess existed, the muscles of the joint were not in a condition of spasm, as in hip-joint disease, but the psoas contraction was due to psoitis resulting from the burrowing of pus. In the reading of his paper he had omitted certain portions for the sake of brevity, but he had there touched upon the interesting question of the influence of the nervous supply of the muscles in this problem, and had presented in full the calculations which had been made concerning the power of these different muscles.

The Ætiology of Club-foot.—Dr. **Samuel Ketch**, of New York, read a paper on this subject in which he reviewed the five prominent theories regarding the causation of club-foot—viz.: (1) The theory that pathological changes occurred *in utero;* (2) the theory of heredity; (3) the theory of mechanical forces acting on the fœtus; (4) the theory of arrested development; and (5) the theory of non-rotation or of retarded rotation. In one hundred and ninety six cases analyzed by him, only ten gave unmistakable evidence of heredity, and, while maternal impressions were often assigned as the cause, careful inquiry not infrequently revealed the fact that the "impression" had been received too late in gestation to affect the development of the part in question. The third theory had had the largest number of adherents, but the objections were that in the early months of pregnancy, when there was an abundance of amniotic fluid in proportion to the size of the fœtus, and hence when there could be no injurious pressure, these deformities were already present; that other parts subjected to the same pressure were not deformed at birth; and that in most cases of congenital club-foot there was nothing unusual about the quantity of amniotic fluid. The author had collected 617 cases of club-foot, 421 of which were of the acquired type. Leaving these out of consideration, there remained 196 cases, of which 126 had occurred in males and 70 in females. There were 150 cases of equino-varus, 3 of equino-valgus, 14 of pure varus, 2 of pure valgus, 4 of equinus, and 16 of calcaneus. In 3 the variety was not mentioned.

At what Age shall the First Treatment of Congenital Club-foot be Instituted?—Dr. H. A. **Wilson**, of Philadelphia, read a paper thus entitled. The author believed in employing at the earliest possible moment any method that would correct the deformity and prevent relapse, but he deprecated the long-continued use of restraining apparatus, on account of the resulting muscular atrophy and, ultimately, even atrophy of the bone. He preferred an elastic to a rigid traction apparatus. In cases where the deformity was reduced with difficulty, and the correct position could only be maintained by the exercise of considerable force, it was often desirable to make an open wound and cut all the resistant soft parts. In graver cases, where tenotomy failed, much assistance would often be derived from an early removal of the astragalus—*i. e.*, when the child was between a year and two years of age. It was not rational to wait for the doubtful assistance of walking, for about this time some muscles would have become inactive and others overactive. Many relapses were due to delay in correcting the original deformity. The normal foot did not reach its full development until the person was ten or twelve years of age, and hence, even with the milder forms of club-foot, the correction must be maintained and muscular development encouraged at least up to this age.

Discussion on the Ætiology of Club-foot.—Dr. **Park** thought that many cases of club-foot could be explained by considering them examples of a tendency to revert to a more primitive type.

Dr. **Phelps** referred to a number of dissections that he had made of club-foot, as found at various periods of intra-uterine life and at various times after birth, and observed that the intra-uterine feet appeared most deformed before the removal of the skin, but exhibited the least deformity of the bone. He also had a specimen of varo-equinus and varo-calcaneus occurring in the same subject and exhibiting very distinctly the contour of the uterus where it had pressed upon the fœtus.

Dr. B. E. McKenzie had seen quite a number of families in which there were two or three cases of club-foot, which might possibly be explained by intra-uterine pressure due to some peculiar formation of the mother. While he accepted the evolution theory in a general way, he looked upon non-development as the chief causal factor in club-foot.

Dr. W. E. Wirt, of Cleveland, said that where there was a reversion to a primitive type the muscles were usually abnormally developed, whereas the opposite was true in club-foot.

Dr. Phelps presented a little girl, seven years of age, upon whom he had successfully operated by his "open" method, and whom he had cured of a severe and obstinate form of club-foot.

Manual Replacement in the Treatment of Club-foot.—Dr. Ap Morgan Vance, of Louisville, contributed a paper in which he described the advantages of patient manipulation and the greater likelihood of obtaining a permanent cure.

The Treatment of Club-foot by Continuous Leverage.—Dr. Henry Ling Taylor read a paper in which he maintained that in most patients under six years of age the deformity could be reduced in a few weeks by this method without an operation, and therefore without interfering with the normal relations of the parts. It was held in this corrected position for several years, and only required occasional observation. The treatment of the valgus deformity was analogous in principle, but the reverse in its action. The author drew special attention to the fact that all the cases of congenital deformity that had been discussed were readily curable in early childhood by mechanical appliances, and that the deformities of poliomyelitis were entirely preventable.

The Use of the Wrench in the Treatment of Club-foot.—A paper by Mr. Robert Jones, of Liverpool, having failed to arrive in time, Dr. Ridlon said that the paper had been prepared because Mr. Thomas's method of using the wrench had not seemed to be understood here in America. The original method consisted in wrenching the parts so severely that they were practically "sprained," and the muscles showed no tendency to reproduce the deformity for a period of from one to three days. When the deformity began to return the wrenching process was repeated. At first the operations were repeated every two or three days; later on the intervals were longer and the operation was less severe. In the intervals some simple retentive apparatus was applied. No anæsthetic was used, as it was thought that the consciousness of the patient was necessary as a guide to the extent to which the wrenching should be carried. If the operation was done very rapidly there was no sloughing produced. In any case, the treatment was quite severe, and it was difficult to get patients in this country to submit to such rough usage.

Dr. Townsend said he had assisted Dr. Gibney at one time, in performing this operation with Mr. Thomas's twister. An anæsthetic was employed, and during the wrenching the sole of the foot was torn open.

The Treatment of Resistant Club-foot.—Dr. E. H. Bradford, of Boston, read a paper illustrated by numerous photographs and tracings of the soles of the feet. The author considered three operations, viz.: (1) Forcible correction, aided by tenotomy, open or subcutaneous; (2) the removal of the astragalus by Morton's method; (3) forcible correction, aided by tenotomy or open incision, supplemented by osteotomy of the neck of the astragalus and of the os calcis. Up to two years ago he had employed subcutaneous tenotomy and forcible correction almost entirely, but more recently a comparative trial of both open and subcutaneous tenotomy, followed by dissections, had proved conclusively that the open incision was much more thorough and effective. When there was deformity of the astragalus which interfered with reduction, wedge-shaped osteotomy of the neck of the astragalus and linear osteotomy of the os calcis yielded the best results with the least sacrifice of tissue.

The Means for the Prevention of Relapse in the Treatment of Club-foot.—Dr. B. E. McKenzie, of Toronto, presented a paper on this subject. The author's chief reliance was upon a shoe so constructed that the person wearing it would be compelled to place the foot on the ground in such a way as to avoid the rolling outward. An ordinary shoemaker's last was sawed through the center, and a wedge introduced so as to evert the front part of the last; then on this as a model the shoe was constructed, and the sole was built up more on the outer side. At night a simple ankle-support was worn which had a foot-piece set so as to hold the foot at an acute angle to the leg. He had found this treatment very satisfactory in preventing relapses.

A Case of Club-foot with Rare Complications was reported by Dr. A. J. Steele, of St. Louis. Thirty hours after an operation for club-foot there was blistering of the soft parts, which was speedily followed by extensive suppuration of the whole foot. At the time this occurred it was found that most of the suture wounds in the general surgical service of the same hospital suppurated. The author attributed these complications to *la grippe*, which was prevailing at that time in the city, and he referred to a similar experience of the French surgeons.

The Weight of the Body in its Relation to the Pathology and Treatment of Club-foot.—Dr. A. B. Judson, of New York, in a paper on this subject, divided the treatment of congenital club-foot into two stages—one before and one after the patient had learned to stand. In the first stage the weight of the body did not interfere, and the deformity was easily reduced by the wearing of a simple retentive and tractable brace, alternating at intervals of a week or ten days with freedom from the brace and with manipulation by the mother. The brace used was a lever which, being of tractable brass, was bent by the hand from time to time, so that it was constantly straighter than the foot, which was thus drawn, after the brace, from varus to the straight position and then into valgus. The completion of this process should coincide with the time when the child began to stand. Thereafter the weight of the body was of the utmost importance, and a walking-brace should be used, the object of which was to hold the foot on the right side of the boundary line between varus and valgus, corresponding to the boundary between supination and pronation in the hand, so that with every footstep the increasing weight of the child became a correcting instead of a deforming agent.

Osteoclasis.—Mr. Nicholas Grattan, of Cork, Ireland, then exhibited his osteoclast and demonstrated its action by operating in a case of bow-legs and three cases of knock-knee. His instrument consisted essentially of two round steel bars which supported the limb, and a bar which was forced down between these other bars, thus breaking the bone. The two curved bars which supported the limb were separated to a greater or lesser extent, according to the age of the patient. The pressure bar was oval where it pressed against the limb, and was made quite long so as not to make injurious pressure on the soft parts. In a case of genu valgum one of the curved bars was placed just above the condyle of the femur, and the other an inch and a half above in the case of a child, or four inches and a half above in the case of an adult. Before the pressure was applied an assistant relaxed the skin as much as possible. The instrument usually broke the bone with a sharp and very audible click. After the operation he applied counter-extension with a weight and pulley, also wooden side-splints. He quoted Mr. Walsham as saying that the pain after this operation only lasted for twenty-four hours and was no greater than after osteotomy. Mr. Grattan had first resorted to osteoclasis in 1887, and had performed altogether one hundred and eleven operations, after all of which the patients had been free from subsequent constitutional disturbance and had recovered perfectly.

Discussion on Club-foot.—Dr. Siegfried Levy, of Copenhagen, sent a contribution on the Treatment of Club-foot, which was read by the secretary. The foundation of the treatment was to be found in the three injunctions: "Bring the osseous parts into position; maintain them in this position; make them act in this position." On account of the injurious effect on the muscles, he rejected immobilization for a longer period than eight or ten days.

Dr. L. A. Sayre said that he had long been of the opinion that the treatment of congenital club-foot should be begun immediately after the birth of the child, and if the general practitioner could be impressed with the simplicity of the treatment required at this early period, there would not be so many neglected cases. The best of all instruments for this early treatment was the hand, whether the condition was one of varus, valgus, equinus, or calcaneus. On the first attempt to gently force the foot toward the normal position it would be found that the circulation became impaired, but if this manipulation was made gently and intermittently, it would be found after an hour that the foot could be made to go almost into the normal position without seriously impeding the circulation. When this had been accoplished, the foot was to be held in this position by any convenient retentive apparatus, and the manipulation repeated day after day. The mother or nurse could easily be taught how to carry out the necessary manipulations. After a while artificial aid might be necessary, and then a piece of moistened sole-leather could easily be molded like a stocking to the foot, and made to retain any desired shape. The leather splint could be remolded from time to time to keep pace with the improvement effected. When the point was reached at which the child could place the foot flat on the ground, walking would complete the cure. Where the muscles were paralyzed, he had been accustomed to employ elastic traction. If, when point pressure was made on a resisting part, it produced a reflex spasm, this was an indication that the part had been stretched to its fullest extent; hence cutting was alone indicated, and, as long as this indication existed, it was a matter of indifference at what age the operation was performed. Having divided the resisting part and slightly over-corrected it, he applied a retentive apparatus for about two weeks or until firm union had taken place. Almost any retentive apparatus combined with proper exercises was now all that was necessary. In aggravated cases, where the bones had become permanently altered, it was necessary to do a cutting operation, and he advised following Phelps's method of cutting anything that resisted—if necessary, even removing portions of the bony structures, and then forcibly and fully correcting the deformity. He saw no occasion for wrenching the parts after the manner described by Dr. Ridlon without using an anæsthetic, for this was unnecessarily cruel; the operator's eyes ought to be a sufficient guide. If the treatment just outlined was carried out fully, he did not believe there would be any relapses.

Mr. Grattan said that he had been able to cure the inversion in many cases by fracturing the tibia in one or more places, and then applying with adhesive plasters a band of iron to the sole and to the posterior aspect of the leg, so as to keep the foot everted and flat. He also employed elastics to pull the foot out, and he insisted that the child should go barefoot.

Dr. Phelps had been particularly interested in Dr. Bradford's paper, as it contained for the most part ideas that he had himself already published. There was a twofold reason for the better results obtained by the open incision: (1) The skin was short and must be lengthened; and (2) we could intelligently cut whatever structures interfered with the reduction of the deformity. He thought the author had been extremely unfair to him when he attributed to the operation the tenderness of the sole exhibited by the child he had presented. This tenderness was entirely due to the fact that the child had not been stepping on the foot. Dr. Bradford had suggested that if the twister had been used healing would have been more rapid and the result better. The speaker could not see the force of this remark, for, supposing the twister able to reduce the deformity, which was not true in this case, it did not seem possible that a lacerated wound produced by the twister would heal more quickly than the incised wound which he had made. Regarding operations on the bones, he wished to state most emphatically that no one was justified in performing such an operation until the milder means had been tried, for it was possible to straighten ninety per cent. of all cases without operating on the bones. The views expressed in Dr. Judson's paper concerning the beneficent action of the weight of the body would be found in a paper which the speaker had read before the International Medical Congress in Copenhagen in 1884. The treatment by continuous leverage did not seem to him so efficient as the manual method described by Dr. Sayre. The time to begin treatment was just as soon as the afterbirth had been expelled from the mother.

Dr. J. E. Moore thought we were all practically agreed upon the treatment to be adopted in the case of young children, and by a process of evolution we were gradually coming to understand that in the resistant cases we must not stop until we had done whatever was necessary to reduce the deformity completely.

Dr. Ryan wondered that nothing had been said about the tendency in young children, after the foot had been over-corrected, for the child to toe in. This had seemed to him often one of the greatest obstacles to success. Unlike Dr. Judson, he often found it necessary to use an apparatus extending above the knee, and sometimes also a hip-band.

Dr. McKenzie agreed with the last speaker as to the great difficulty in preventing this toeing in, and he did not see how the long splints would obviate this. He should also like to hear a further expression of opinion as to how frequently it became necessary to fracture the tibia in order to overcome the inward twist. He believed the toeing in occurred partly at the mid-tarsal joint, and the shoe which he had presented was an excellent precautionary means against this in-turning of the foot.

Dr. Wilson was of the opinion that the cases in which the varus persisted after apparent correction of the anterior part of the foot were generally the result of the application of considerable force to this part of the foot, or where a moderate force had expended itself in the tarso metatarsal joint. He had found it of service in mildly resistant cases to apply a wet bandage to the foot, so as to make it one homogeneous mass; then the force was more apt to be spent on the tibio-astragaloid articulation. Referring to the correction of the pigeon-toe, the speaker described an apparatus which had been devised by Dr. Hopkins, of Philadelphia, the object of which was to cause eversion of the foot whenever the person stepped squarely on the heel. Even with this apparatus, he was inclined to believe that the appearance of correction was due to a motion at the knee or at the hip joint, rather than to any correction in the ankle joint, as intended.

Dr. R. H. Sayre considered that in many cases the in-toeing was due to a general distortion of the whole extremity. In young children, holding the foot in proper position and directing the weight of the body upon it, these upper curves sometimes corrected themselves, but in older subjects osteotomy of the os calcis was indicated.

Dr. Ketch said that in speaking of the ætiology of club-foot he had referred to the theory of rotation, which applied not only to the foot, but to the femur, tibia, and fibula, and this rotation often persisted after birth. He believed, with Dr. Sayre, that it was often necessary to use some apparatus which would act upon the rotators of the thigh.

Dr. Whitman said that pigeon-toe was an effort of Nature to prevent an increase of an already existing deformity. In many cases, where the great toe was disproportionately strong and tended to draw the foot inward, the application of a brace extending up to the hip, by turning the thigh outward, placed the toe at a disadvantage.

Dr. Judson considered that the whole limb was inverted, and his only treatment was instruction in the proper manner of walking.

Dr. Ridlon said that, aside from the inconvenience of giving an anæsthetic every time the wrench was to be applied, it had been thought by those who had employed this treatment that there was no trustworthy guide to the degree of wrenching to be used each time other than the patient's consciousness. The speaker then warmly defended Dr. Bradford against the accusation of unfairness in not giving Dr. Phelps due credit for his previous work and writings, and added that he thought Dr. Phelps had not at least emphasized one of the chief points in Dr. Bradford's paper—viz., the importance of thoroughly correcting the lateral deformity, as shown in the diagrams of the sole of the foot, where the lines passing through the heel and through the front of the foot were coincident. The speaker believed thoroughly in Dr. Phelps's principle of treating the deformity step by step, but the point about which he especially desired information was as to how we were to know, when one or more of these different steps had been previously carried out, as to the prospects of still further and more radical treatment. To illustrate the difficulty in making any prognosis concerning the duration of the treatment of a given case, and whether it must be operative or not, he cited a case which had been seen and treated by a number of well-known surgeons, no one of whom had known that the case could only be cured by Phelps's open operation, yet the subsequent history showed that this was the only operation that effected a cure.

Dr. C. C. Foster considered that the deformity of club-foot was due to destruction of the balance of action of opposing tendons, and that, in consequence of this, the bones secondarily adapted themselves to this resulting deformity. Hence there was no certainty that a relapse would not occur until this even action of the muscles had been completely restored. Holding the foot for six months or more in a plaster bandage did not tend to restore this healthy action of the muscles.

Dr. J. C. Schapps, of Brooklyn, said, regarding the action of braces, that if the deformity could not be quite easily reduced by manual force, it could not be generally done by instruments, for the foot would bear much more manual force for a short time than force exerted by instruments.

Dr. Whitman said, with reference to the severe case referred to by Dr. Ridlon, that he thought it was an illustration of the fact that the astragalus had become more and more distorted during the long period of treatment as the result of constant relapses, and if three or four months earlier the right-angled position had been secured and maintained, it would have been found after two or three years that the shape of the astragalus was materially different.

A Report of Six Cases of Excision at the Knee Joint was read by Dr. J. E. Moore, of Minneapolis, who emphasized the point that he believed all these joints could have been saved by proper treatment at the proper time, and also that many such cases, when seen in the later stages, might be treated successfully by excision.

Dr. A. J. Gillette, of St. Paul, was inclined to look upon the treatment of these cases as unnecessarily radical, and believed that sufficient time had not elapsed to justify the statement that they were successful.

Dr. J. D. Griffith, of Kansas City, had seen flexion after some of his excisions, but now that he had adopted the plan of preserving the patella, this was avoided. Arthrectomy would have given a better result, he thought, in one of the author's cases.

Dr. Phelps had done excision about fifty times and had also performed some arthrectomies, but the latter, as a rule, should be avoided, for the very object of the operation—the securing of a movable joint—was now conceded by the best operators to be an actual detriment. If, instead of cutting across the bones in the growing limb, one cut according to the contour of the limb, leaving the convex surface of the femur and the concave surface of the tibia, one would get a better result than by any other method. If, on exploring with a scoop, it was found that Nature had shut off the disease from the rest of the bone, no matter if the disease had already involved five or six inches, amputation might be avoided.

Dr. Wilson had had occasion to investigate ten cases of more or less serious deformity following excisions of the knee joint, and he had found that the plaster splint which had been applied had embraced the foot, the leg, and a considerable portion of the thigh. It was well known that such a splint did not give complete immobilization, unless the body also was included in the plaster dressing.

Dr. Moore had had no trouble from flexion since he had learned how to do the operation. The length of the splint was a very important matter.

Miscellany.

Notes on Asiatic Cholera.—The following, constituting Circular No. 46, prepared by the surgeon-general of the navy, has been issued for the information of the naval service:

"In consideration of the possibility of the further advance of Asiatic cholera, now epidemic in certain portions of Europe, the following notes on treatment and prophylactic measures, extracted from various sources, are issued:

"Although quarantine regulations are more efficient now than formerly, yet the history of the entrance of this disease into the United States is such as to warn us against being lulled into a false sense of security; thus in 1832, 1833, 1854, 1867, and 1873, the disease pursued the same course as at present, starting in Asia, gradually progressing into Europe, effecting an entrance into this country from intercourse with European ports. Only in 1864 were we able to restrict cholera by quarantine, although it had been imported into the harbor of New York.

"Dr. Rausch claims that, in the other epidemics, the reason quarantine regulations were inefficient was that while quarantining some ships others were allowed to escape this regulation; and that they deposited on our shores cholera-infected persons and fomites, and that it was only when from this cause the disease commenced that our attention was directed to the cholera-infected ships, which had undergone or were undergoing quarantine.

"Before taking up in detail the different methods of treatment which have been in vogue in different epidemics, a few general suggestions as to the management of all cases are deemed advisable.

"Since the days of Hippocrates, the injunction to avoid vacillation or change of therapeutic measures in the treatment of individual cases has been enjoined. So short is the course of the disease (it having been ascertained by the French Government that out of 4,907 deaths one third of the number died in from six to twelve hours, and a second one third in from twelve to twenty hours), that we only have time to institute and give fair trial to one plan of action in the majority of cases.

"Again, medicine can do little good in the later stages of the disease, on account of the great congestion of the alimentary canal, the sluggish capillary circulation, and the thickened viscid state of the blood, impeding absorption.

"Heroic medication, which many writers claim is pre-eminently suitable for cholera, is necessarily valueless in the advanced attack, because the drugs are either swept away with the discharges or else remain behind without exercising their action, in which case they are liable to become sources of great embarrassment in the stage of reaction, from their absorption upon the restoration of this function. One physician, to prove the correctness of vigorous medication, writes that to one of his cases he gave twenty grains of extract of belladonna without producing dangerous symptoms; no mention, however, is made of the recovery of the case.

"*Stimulant and Opium Treatment.*—Give half an ounce of brandy or whisky (hot), with a few drops of tincture of capsicum, every five minutes, during the cold stage. In addition, give twenty drops of laudanum combined with an equal quantity of spirits of camphor every half-hour until reaction commences. Now greatly moderate the administration of stimulants. This method of treatment is condemned chiefly on account of the unmanageable reaction it produces.

"*Chloroform Treatment.*—Give thirty drops of chloroform every half-hour until reaction sets in.

"*Opium Treatment.*—There is great danger of giving too much of this drug; thus, during one of the epidemics, the physicians of the cholera hospital at Boston claimed that many of their cases were admitted with symptoms of opium poisoning, and, furthermore, that all these patients died, so there certainly seems to be no virtue in the production of narcotism.

"Among the combinations in which opium predominates may be mentioned the following:

"℞ Pulv. opii,
Camphoræ,
Plumbi acetatis, āā gr. j.

"Sig.: One pill every half to two hours as indicated.

"The above pill has been extensively employed in Philadelphia.

"The following treatment has been much used in India: At the commencement of the attack give castor oil, with twenty drops of tincture of opium; also a cholera pill, the composition of which is—

" ℞ Pulv. opii	gr. j;
Oleores. piperis	gtt. ij;
Asafœtidæ	gr. iij.

"Composition of one 5-gr. pill.

"This pill is supplied to the troops to be administered as soon as the diarrhœa commences.

"*Philippine Island Treatment.*—So soon as symptoms appear, make use of friction all over the body, with a brush dipped in alcohol or brandy, then give a cup of hot tea with sixty drops of ether, and wrap up the patient thoroughly in blankets; if profuse perspiration does not follow in four minutes, repeat the tea and ether.

"*Sodium-chloride Treatment.*—It was originally though tthat there was a deficiency of sodium chloride in the blood during cholera, and to remedy this the following treatment was instituted: Give a Seidlitz powder at once, preferably combined with a small amount of magnesium sulphate; so soon as this acts, give an abundance of beef-tea well salted. Relieve the thirst by alkaline waters. Just here it may be noticed that the greatest diversity of opinion exists as to the propriety of allowing patients to have water; some claim that it is impossible to quench the thirst no matter the amount given; others say that the less water or other liquid allowed, the less the vomiting and purging. Others again claim that no measure is so conducive to the comfort and well-being of patients as the free allowance of water. As part of this treatment we may include the following, at present recommended by many German physicians: Give frequent enemata of common salt, half an ounce, and sodium carbonate, thirty grains in one pint of water, injected at a temperature of 120° F. This greatly relieves the cramps and uneasy feelings in the stomach, and, as a mode of treatment, is at present highly recommended by the German physicians.

"*Treatment by Bleeding.*—This is almost universally condemned; the sole reason for its adoption was a negative one—if the blood did not flow then the patient would surely die; on the other hand, if it did, some hope of recovery could be entertained.

"*Purgative and Emetic Treatment.*—Treatment by means of calomel as a purgative or ipecac as an emetic is recommended by some and condemned by others.

"*Acid Treatment.*—It being well known that the comma bacillus thrives in an alkaline and dies in an acid medium, it is proposed to add ten to fifteen drops of dilute sulphuric acid to every glass of drinking-water.

"*Quinine as a Remedy.*—This has been highly recommended in the treatment as well as in the prevention of cholera; it seems, however, that its value is due to its antiperiodic properties. Malaria, instead of antagonizing, seems to assist in the development of the scourge.

"*Stimulant Treatment.*—In making use of these remedies diffusible stimuli, as camphor and ammonia, are to be preferred to alcohol. Blisters and counter-irritants are also recommended, especially mustard poultices over the epigastrium. During convalescence a flannel abdominal bandage should be worn.

"*Treatment by Wet Packing.*—A most dangerous procedure: during an epidemic in Boston every patient so treated died.

"*Treatment of Cantani, of Naples.*—Having observed that the tanners of Italy had a great degree of immunity from cholera, he was led to adopt the following measures: As adding weight to this method, it may be mentioned that those in China who drink tea which has been so long boiled that the tannin is extracted, escape the disease to a great extent. The plan of procedure is as follows: Into an irrigator suspended at a height of from six to twelve feet is poured a solution made of an eighth to a quarter of an ounce of tannic acid with an ounce of acacia and about twenty drops of tincture of opium in three to four pints of water, sterilized by boiling, and at a temperature of 100° to 102° F. The irrigator terminates in an intestinal tube. With this it is possible to overcome the ileo-cæcal valve and even the pylorus; soon after the injection the patient voids from a third to a half of the fluid. Injections should be given shortly after a passage, and should be from two to six in number daily. The earlier this treatment is instituted the more favorable will be the result. In connection with the above plan of procedure, he makes use of hypodermic medication; thus, in the algid state, inject about one pint of a solution of sodium chloride (four per cent.) and sodium carbonate (three per cent.). The best place to insert the needle is into the sides of the abdomen, below the costal arches.

"*Ferrán's Method of Inoculation.*—If the official statistics of the results of this method are correct, it is undoubtedly not only of the greatest value, but should be at once thoroughly investigated. In twenty-two villages of Spain, having a population of 135,052, of which number 30,491 had been inoculated, 12·69 per thousand of the inoculated contracted the disease and 3·41 in the thousand died; among the non-inoculated, 80·28 in the thousand contracted the disease and 33·50 per thousand died. The following is his method, taken from the report of Dr. E. O. Shakespeare, to the State Department, copies of which are furnished the naval stations and hospitals:

"*Instructions for the Practice of the Preventive Inoculation against Asiatic Cholera according to the Method of Ferrán.*—'(1) The cholera vaccine is nothing more than a pure culture, in bouillon, of the comma bacillus. Its easy and long preservation (four or five days) allows of its transportability to great distances, taking care always to keep the flask which contains the material upright.

"'(2) Heat and cold do not interfere with its preservation if the vaccine is to be used in a short time. It should not, however, be kept out of doors during the warm season.

"'(3) The vaccine should be kept in flasks of the model of Ferrán, with a flat bottom and a short neck. The stopper, which is of rubber, fits perfectly, and is penetrated by two glass tubes, one straight and short, which does not extend below the inferior surface of the stopper, and which does not project above more than some two centimetres, is plugged with a small quantity of sterilized cotton and a superficial covering of wax. The other glass tube is longer, and extends on the lower side as far as the bottom of the flask, while its superior end is curved and terminates in a capillary extremity, the tip of which is closed with wax.

"'(4) When the vaccine is to be used it is necessary to make two principal preparations for the operation. A small syringe for the hypodermic injection and a small vessel into which it is necessary to empty the fluid from the flask are required. The syringe should have metallic pistons and mountings, without mastic of any kind and without rubber. Its capacity should be one cubic centimetre; its needle thicker and shorter than that of ordinary use. Before beginning the vaccination the syringe must be filled two or three times with boiling water, which is aspirated and expelled through the needle. This is called sterilizing the instrument, and by this means the extraneous germs are destroyed which might be contained in it, in order to avoid the production of phlegmons and abscesses. The trouble in taking this precaution will be little. Acting thus one may perform thousands of injections without fear of any accident. It is suggested that it is a bad custom to pass the needle through a flame in order to sterilize it, because this mode of procedure draws the temper. Another precaution that must be taken relates to the examination of the syringe before using it in order to be well assured that the piston acts perfectly and that not a single drop of the liquid escapes by a leak in the cannula. This latter defect is sufficient to reject the instrument. If the syringe aspires air, because the leather washer which is placed at the end of the glass tube in order to facilitate its adaptation is dry, or the piston is in the same condition, it is necessary to delay a little while in order to take the syringe apart and soak it in warm water. It is convenient to keep several syringes for use, with a sufficient number of needles, when many inoculations are to be performed.

"'(5) The small receptacle into which the vaccine is poured in order that the syringe may be filled readily is a capsule, a cup, or some similar vessel. Before use it should be washed and dried with extreme care, and immediately before using, passed through an alcohol or Bunsen flame, in order to sterilize it.

"'(6) All these preparations having been made, the drop of wax which closes the capillary extremity of the long tube of the flask is removed, and at the same time also the wax covering of the cotton stopper of the short tube, but by no means must this cotton stopper be removed; a rubber tube or the extremity of a small Richardson spray apparatus is adjusted to the short tube. The capillary extremity of the long tube is now slightly warmed, in order to soften somewhat the wax which may have been drawn into its lumen by capillarity, and air is forced into the flask, either by blowing into the rubber tube or by working the Richardson atomizer; the air injected by pressure upon the vaccine fluid forces the latter out through the long tube with the capillary extremity, and it is collected in the cup or small sterilized vessel. This latter is then covered with white paper, which has been scorched in the flame, or with sterilized glass plate; as often as the syringe is filled, this cover will be removed and again immediately afterward replaced.

"'(7) Never should the rubber stopper which closes the flask or the cotton which plugs the short, straight tube be removed, because otherwise the germs of the external air might enter and contaminate the culture, and in this way give place to local and general accidents among the inoculated. Whenever, through the movements of transportation, the cotton plug in the short glass tube has become so wet as to impede the passage of the air which is to be forced into the flask in the act of expelling the vaccine from it, it may be removed with the point of a needle and rapidly substituted by another plug of surgical cotton which has been carbolized or salicylized. If this proceeds with cleanness and promptness, there is no danger in doing it. When the cotton, although wet, does not impede the injection of the air, it is better not to change it.

"'(8) After terminating the vaccination, again the capillary extremity of the curved tube is passed through the flame until the small quantity of liquid remaining in it is evaporated; it is then stopped a second time with a small drop of wax; and from the other glass tube the rubber tube which has been employed for forcing in the air is removed and another thin layer of wax is placed over the cotton plug.

"'(9) If in the smaller vessel or cup any of the vaccine fluid remains after the vaccination of all persons present, it is boiled, and in this manner the culture is killed, for it should not be used in another operation, because atmospheric germs might become mixed with it.

"'(10) The technique for the practice of the inoculation is the same as for all hypodermic injections. The most convenient region is that of the brachial triceps.

"'(11) The dose is one cubic centimetre—or the contents of a syringe—into each arm, for individuals of all ages and conditions.

"'(12) Five days having elapsed, revaccination may be performed by following the same instructions.'

"The vaccine is nothing less than a pure culture of comma bacillus of Asiatic cholera in rich bouillon; the degree of virulence is directly in relation, up to a certain point, with the richness of the nutritive medium. Aeration, among other circumstances, favors the intensity of the culture. The best vaccine is the most virulent. Three inoculations are necessary in order to obtain a profound immunity. Inject into the cellular tissue of the brachial triceps. The prophylaxis is due to the habituation of the organism to the rapidly diffusible substance carried by the microbe. The symptoms developed after the inoculation, although of considerable intensity, require no therapeutic measures.

"*Salol Treatment.*—Löwenthal found that in culture media the toxic properties of the ptomaines of the comma bacillus were only developed when such media were pancreatinized; and from this he considered that the cholera bacillus was harmless until it reached the alkaline contents of the duodenum, where it came in contact with the pancreatic juice and produced the factors of the disease. After considerable experimentation it was found that salol best neutralized the toxic properties of this culture, so that it has been recommended that this drug be given in doses of from ten to fifteen grains every hour until fifty or sixty grains have been taken. The salol breaks up in the duodenum into carbolic and salicylic acids.

"In the treatment of cholera particular attention must be given to the keeping of blankets on the patients; it has at times been found necessary to restrain their movements in order to prevent the exposure incident to excessive restlessness.

"In concluding the subject of treatment it would be of service to give the results, obtained from several different methods of treatment during an epidemic in England, the relative mortality being derived from records in 6,000 cases:

"Treatment by venous injection	85·7	per cent. died.
"Treatment by stimulants	58·5	per cent. died.
"Treatment by stimulants with emetics	67	per cent. died.
"Treatment by stimulants with calomel and opium.	60	per cent. died.
"Treatment by ice, with stimulants	50	per cent. died.
"Treatment by opium	58	per cent. died.
"Treatment by calomel	37	per cent. died.
"Treatment by ipecac with moderate warmth	34	per cent. died.
"Treatment by the sodium chloride method	25	per cent. died
"Treatment by ice alone	35	per cent. died.

"Although Cantani's treatment did not meet with much success in the recent Chilean epidemic, yet it was considered in Austria and Italy to be the only plan of treatment which offered any hope of success in the advanced stages of the disease.

"*Prophylactic Measures to be observed.—General Precautions:* (1) Give particular attention to the water supply. (2) Examine the surroundings of all wells with reference to the existence of any cause of pollution. (3) Remove all garbage or other refuse, and either burn or bury it. (4) Use copperas, dry or a solution of one pound to the gallon, in all places which are in the least offensive. (5) Examine the plumbing, and remedy all defects. (6) Thoroughly and frequently cleanse all stables, cellars, etc., using whitewash freely. (7) Drain all wet places. (8) Exercise great care in preventing debauchery among those under your supervision (in England it was observed that the greatest number of new cases were reported on Monday among the lower classes, who had indulged excessively the previous Sunday). A disordered stomach is incapable of producing those juices antagonistic to the virus. (9) Perfect ventilation is imperative as a preventive measure.

"*Personal Precautions:* (1) Avoid excesses in food and drink. (2) Take meals at regular intervals. (3) Avoid (*a*) intense excitement, (*b*) violent exercise, on account of the consequent fatigue which greatly predisposes, (*c*) colds from undue exposure. (4) Avoid ice water not only on account of the intrinsic injurious effects of the cold, but also from the danger of importation of germs by ice which has been placed on infected streets or washed in infected water. (5) The range of diet should not be restricted suddenly or exceedingly. (6) Keep the skin active, by frequent baths in tepid water, and never eat without first carefully washing the hands. (7) Regard under or over ripe fruit as poison. (8) Use no water for drinking, or for washing cooking or table utensils that has not been thoroughly boiled; it is also advisable to eat no uncooked vegetables or fruit; again, always boil any milk used. (9) If a filter is used, see that the water cooler is rinsed daily and the filtering material washed or changed frequently; it is also advisable to add a teaspoonful of dilute sulphuric acid to every gallon of drinking water. (10) If an attack of diarrhœa comes on, the patient should lie on the back and treatment should be at once instituted. (11) Beware of public laundries. (12) A vegetable diet, predisposing to alkalinity of the intestinal canal, is to be avoided. (13) Do not take food or drink in the room where a patient is being treated. Rinse the mouth and wash the hands and forearms before meals in a solution of borax. Take frequent baths in water which contains one ounce of borax to the gallon. (14) Wear a flannel band around the abdomen.

"*Precautions in Sick Quarters:* (1) Make the place where patients are to be treated as bare as possible, no curtains, books, upholstered furniture, and the like. (2) Receive all discharges in a vessel containing a pint of disinfecting solution, thoroughly mix and allow to stand at least fifteen minutes. In different epidemics, on account of the immense quantity of the discharges and large number of patients, the disinfection of stools was most difficult. The following disinfectants have been tried: Ferrous sulphate—thoroughly tested in Frankfort and Leipsic, in 1866, without any good results. Carbolic acid—did not give satisfaction. Chloride of lime and lime—proved themselves inefficient. Acidulated solution of corrosive sublimate, 1 to 500 or 1 to 1,000, is the most satisfactory. Always acidulate with muriatic acid, on account of the destructive influence of acid media on the bacilli. Also, it is well to add to the stock solution a small quantity of potassium permanganate, as a poison characteristic. After disinfecting stools mix with sawdust and burn. (3) Clothing, bedding, napkins, etc., soiled by a patient should be at once immersed in a 1-to-1,000 sublimate solution, allowed to remain in it four hours, then boiled for four hours. After recovery or death all clothing should be burned. All utensils used by patients should be placed in disinfecting solution before washing. (4) During convalescence treat all discharges as if they were fresh cholera discharges. (5) The dead should be enveloped in a sheet saturated with a disinfecting solution and at once placed in a coffin, without preliminary washing, and buried. Cremation is preferable."

The Gross Monument Fund.—Dr. John B. Roberts, treasurer of the American Surgical Association, acknowledges the receipt of the following contributions to the Gross Monument Fund. Contributions are hereafter to be sent to the Gross Monument Committee, of which Dr. J. R. Weist, of Richmond, Ind., is chairman.

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Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

THE NEW YORK MEDICAL JOURNAL, October 22, 1892.

Original Communications.

ON RESTORING SUNKEN NOSES
WITHOUT SCARRING THE FACE.*

By ROBERT F. WEIR, M. D.,
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The recent surgical endeavors to restore a sunken nose, whether this has occurred from traumatism or from the ravages of syphilitic disease, have, where the loss of support has involved the cartilaginous sæptum, proved so far unsatisfactory. Among the many attempts that have recently been put forth to overcome such deformities, the plan proposed by König and modified by Israel † has so far proved the best. It is, however, open to the objection that this procedure, as well as almost all the others that have been suggested, gives rise to a very serious and very disfiguring scarring of the face. Israel's operation consists in that, at first, the cartilages and the extremities of the nose are separated by a transverse incision from the sunken bridge to allow the tip of the nose to resume its normal level, and then a frontal flap is detached from the forehead. This latter is composed of the skin, periosteum, and a layer of bone, which is separated by a chisel, turned down without twisting and with the skin surface beneath into the nasal gap, and sutured around the lowered extremity of the nose. The sides of the resulting gap in the forehead are also stitched together as far as possible. The exposed surface of bone in the transplanted portion, now looking forward, becomes in time covered with granulations, and finally by a cicatrix which, as it contracts, draws the skin on its edges inward so that the resulting scar is diminished to two thirds of its original width. When the parts are soundly healed, the surgeon proceeds by a second operation to close the cleft left on the lateral aspects of the nose. These are made beneath the skin of the sunken part of the nose and above the turned lower part of the frontal flap. The transplanted portion is drawn to one side with a sharp hook, and the skin over the old bridge of the nose is divided in the median line and a quadrangular flap detached by means of two transverse incisions made at the upper and lower extremities of the longitudinal one. The cutaneous cicatrix of the transplanted portion is now turned outward and the first formed flap from the sunken portion is applied to its raw surface and sutured in place. The opposite side is subsequently treated in a similar fashion. This completes the operation.*

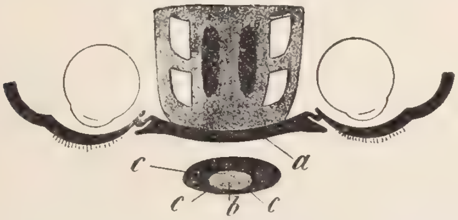

Fig. 1.—*a*, the skin of the sunken nose; *b*, the frontal osteo-cutaneous flap, skin surface beneath; *c*, the cicatrized raw surface of *b*.

Besides the scar that is the unavoidable result of this operation, there is a disappointment not infrequently met with in that the small portion of bone detached from the os frontis and carried downward in the flap to fill up the gap of the sunken portion of the nose becomes absorbed and disappears, resulting in a reproduction of the deformity. This I have seen occur in two instances, and I now show to you a patient in whom this mishap occurred.

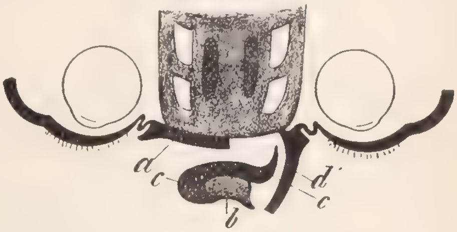

Fig. 2.—*a* and *b* as in Fig. 1; *c*, the turned-down skin flap from the transplanted osteo-cutaneous portion, confronting a refreshed surface; *d*, corresponding to that of the raised skin of the originally sunken part of the nose.

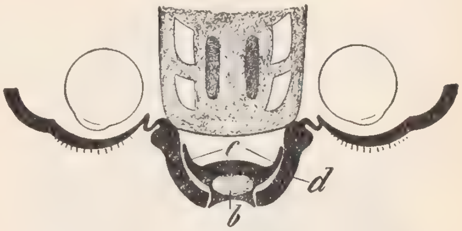

Fig. 3.—The operation completed on both sides.

It is not difficult to overcome the deformity which results from the flattened bony ridge of the nose by division by a chisel of the ossa nasi, first in the median line and subsequently at the line of their attachments to the superior maxilla, or by the use of forceps, to fracture their attachments to the same bone. The sunken bridge can then be raised and held *in situ* readily by a pin crossing the nose and secured by clamping on it a shot at each end, pressure on the shot-clamp being guarded against either by the interposition of a small pad of iodoform gauze or, what I like better, of a small square of a thin shaving of sterilized cork. This little retention apparatus can easily be worn from five to ten days without giving rise to any perceptible scar. The chiseling of the sunken nasal bones can either be accomplished by a small incision, beveled in its character, through which a narrow engraver's chisel can be introduced, and the section then be made from without, or the section of the bones in the median line and laterally can be accomplished, but with a little more difficulty, without any external incision, by the chisel being carried up through the nasal passages. If an external incision is made, the little mark—thanks to the suggestion of Packard, of Philadelphia, of making it of a beveled nature—is quite imperceptible. But when we come to the question of the restoration of the sunken central cartilage, I have considered until recently that such an improvement was one of the most difficult things in nasal surgery, and I was not sufficiently pleased with the plan I presented in 1880 * of taking flaps from the cheek to continue it further. Another procedure was therefore tried in the following case :

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* Read before the New York Surgical Society, January 13, 1892.

† *Archiv f. klin. Chirurgie*, Bd. xxxvi, S. 373.

* Israel, in the *Deutsche med. Wochenschrift*, January 14, 1892, admits that his method, even where successful, is attended by three drawbacks—viz., that the hollow between the forehead and nose is obliterated; that the nose itself is broadened; and that a more or less wide cicatrix longitudinally scars the nose.

He has, therefore, modified somewhat his procedure. The pedicle of the nasal flap is cut through at the end of three weeks and so deeply inserted in the subjacent skin that the physiological sinking between the glabella and the root of the nose is restored. He finally draws the lateral flaps of skin at his final operation so far toward the median line over his transplanted bone as to cover the same in this way with skin. To do this satisfactorily, however, one should, in cutting the forehead flap, make the skin and periosteum cut broader than the bony piece, so that this latter could, so to speak, be entirely enveloped by skin when in its new place.

Four years ago a young man, about twenty-six years of age, with a history of syphilis, presented himself to me with a nose sunken to a level of his frontal prominences from depression of the nasal cartilages and bones from the aforementioned affection. His right ala nasi was doubled in on itself and was almost obliterated, while his left one projected markedly forward (see Figs. 4 and 5).

Upon cogitation, I submitted to him the difficulties of the case and said that I was willing to resort to experimental surgery upon him to be conducted in the following manner: I entertained then the idea, following upon the gratifying results that had occurred in the insertion of bones belonging to another individual, as had been successfully practiced by Macewen and Poncet, that in the present conditions a bony support might be inserted under the nasal skin and left there, with the hope that the same might become organized and form a permanent portion of the man's economy. After some deliberation I concluded that the breast bone of a fowl, from its angular shape, would best imitate the form of the nose and give the most satisfactory support. I determined, therefore, to use the same in this patient's case, but I considered it essential that both sides of the bone used should have vascular supply, and, moreover, that the new bone that I introduced should not be exposed at any point in the nasal cavity.

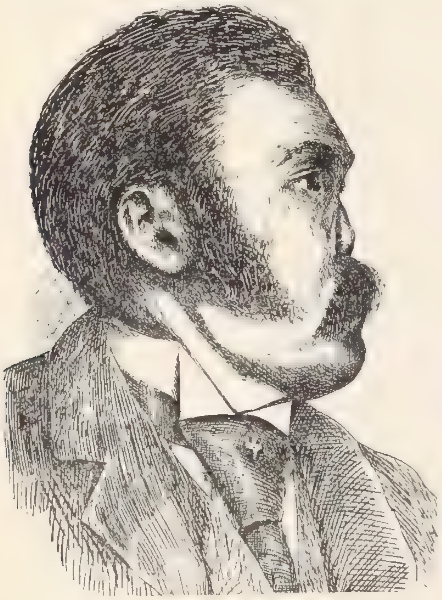
FIG. 4.

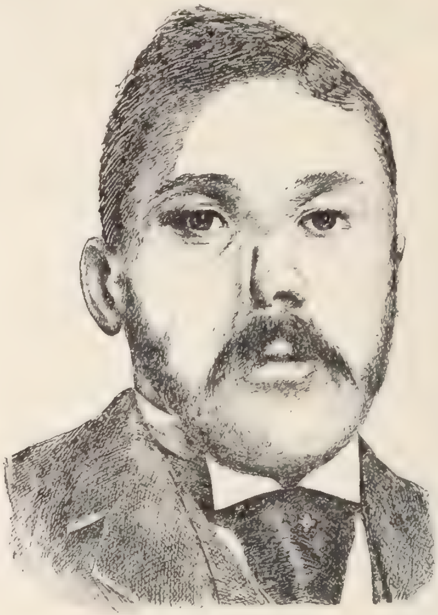
FIG. 5.

A triangular incision was therefore made in October, 1889, with the apex meeting just above the ends of the nasal bones and its legs running down on each side to the base of the alæ nasi. The incision was made into the skin tissue, but not into the cavities of the nostril. The knife was then so employed as to split the skin belonging to the tip of the nose and the alæ in a downward direction, and also similarly in an upward direction nearly to the level of the frontal bones. This was accomplished without entering the nasal cavity, save in one small spot which was closed afterward by catgut sutures. I had prepared in this way a bed for my bone, and had, at the same time, skin of sufficient thickness and looseness to cover over the new piece of bone after it had been inserted. At this period of the operation a young duck which had been chosen was killed, and its breast bone, deprived of periosteum, was cut into a shape of nearly an inch and a half long. The angular character of the bone was preserved by taking the projecting vertical sternum of the duck

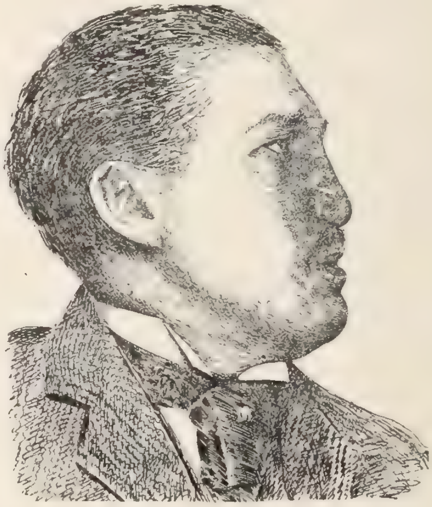
FIG. 6.—After operation. Implantation of a duck's sternum.

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* See *Medical Record*, March 13, 1880. Weir, On the Relief of the Deformity of a Broken Nose by some New Methods.

for one side of this new nasal support and one of the attached lateral portions for the other side, cutting away the second lateral portion as not being required. This gave me a triangular portion composed of two very thin layers of compact structure of bone.

I will ask attention later to the character of the support, which was trimmed in such a way on its sides that the broader portion was fitted downward and its narrower portion was at the upper end and rested upon the nasal bone. The skin accommodated itself without any tension over it and was secured by sutures. The restoration of the nose was remarkably satisfactory (see Figs. 6 and 7).

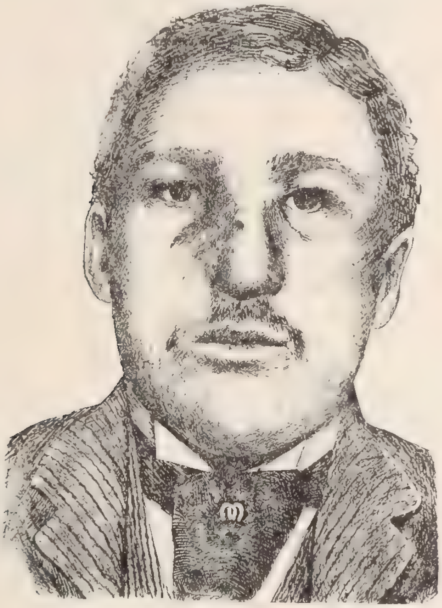

Fig. 7.—After operation. Front view.

Three weeks passed. The patient's delight was great, and mine was greater. Unluckily, soon after he complained of an increased discharge from his nose, and I felt, by means of a probe introduced through the nostril, that the lower layer of tissue which I had carefully preserved had yielded at a small point. At the end of the seventh week a swelling appeared at the root of the nose, culminating in a little abscess which discharged and left a persistent ulcer. In brief, at the end of eight weeks I felt that my procedure was not a success, and thought it was necessary to remove this foreign body. I reopened the old incision, exposed the bone on its right side first, and appreciated that on its left side there had been a good many firm adhesions of the bone to the tissue, and resolved that I should only take away the right portion of the bone, which was undoubtedly loose and useless. Unfortunately, in my endeavors to divide the bone along its central portion so as to leave in the left half of it, I could not avoid such an amount of motion as to loosen considerably this portion of the support. Two weeks later, as a result, I think, of this surgical traumatism, I was compelled to remove the left half also.

The examination of the first portion removed, as well as the second one, showed that in numerous points along the edges vascularization had advanced to a distance of as much as half an inch into the substance of the bone. Along the portion which corresponded to the free border of the nose, whence the bone had been cut at the time of the operation, there was also vascularization running similarly into the substance of the bone.

It seemed that if my selection of a bony support, instead of being two thin layers of the compact structure, without any cancellar bony tissue, had been one where the conditions were more equalized or reversed, or if, perhaps, instead of such a large piece in an intact condition, there had been put in one that had numerous perforations in it, so that vessels could have reached the more distant portions of bone, success might have been achieved. The outcome of the case was simply that by the V-shaped incision the tip of the nose had been dropped down nearer to a level, and also by the inflammatory action set up by the procedure an increased thickening of the nasal tissue had resulted, which persisted for a year afterward and which caused, in the patient's estimation, a decided improvement over his original condition.

I was prepared in January, 1891, to repeat this operation, with the above modifications, in the person of a young woman, twenty-four years of age, who had a somewhat similar condition, though to a less degree, caused by syphilis, with total destruction of the sæptum. Her appearance is well represented in the accompanying figure (Fig. 8). I, however, learned from a work which then came to my notice, entitled *De la prothèse immédiate*, that its author, C. Martin, of Lyons, had remedied this deformity in several cases by the use of an internal support of platinum, and that the procedure had received the distinguished indorsement of the celebrated Ollier, of Lyons. Martin, in this work, gave the details of three cases where, after the nose had been separated from within the mouth from the bony parts immediately surrounding the nasal aperture, a support of narrow platinum had been inserted, one leg of which rested upon the nasal bones and the other two legs had, by sharpened points (Fig. 9), been inserted into the superior maxillæ on each side just within the line of the alæ nasi. On this support the restored nose lightly rested. No external incisions were resorted to whatever. No inconvenience resulted from the retention of this narrow piece of platinum, and in the reported cases the patients had worn the support for two, three, and four years, respectively. Platinum is, as is known, an inoxidizable material, unirritating, strong, and capable of being

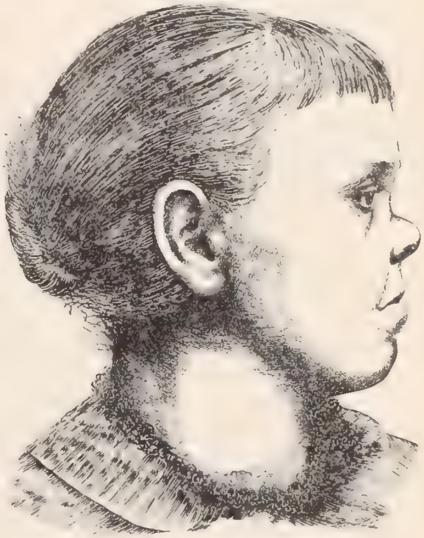

Fig. 8.—Before operation.

soldered, in which latter point aluminium, which might be thought of, is defective. Therefore, in the case which was then under my consideration I determined to test the efficacy of this method.*

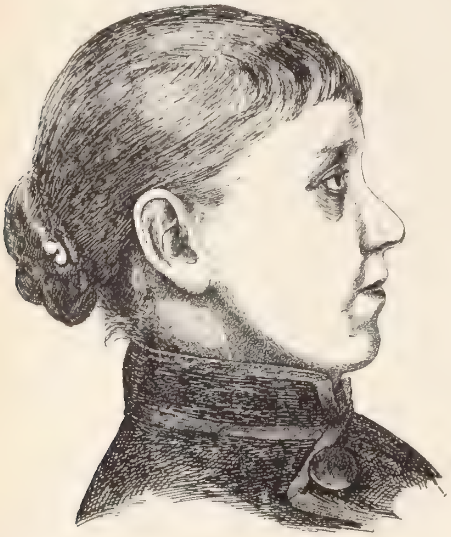

Fig. 9.—After the insertion of Martin's nasal supporter.

On February 9, 1891, this procedure of Martin's was carried into effect. The upper lip was raised and its mucous attachment to the jaw cut through and the nose separated from the periphery of the osseous opening of the nasal cavity up to the middle of the nasal bones. A platinum support,† made for me by the skillful hands of a dental friend, Dr. S. L. Benson, and depicted in Fig. 10, was introduced, the broad portion resting on the nasal bones and the two upper wires soldered to it, passing laterally up under the nasal bones. This was resorted to so that the support should not be tilted away from its bony support at this point. Two little openings were made on each side of the alæ in the superior maxillæ by means of a fine awl, and the pointed ends of the lateral legs of the platinum support were inserted therein. These lateral portions should be above the level of the alæ so as not to interfere with their muscular motions. The lifted-up nose was then allowed to sink on these supports, which was accomplished without any traction or pressure. One or two stitches were made in the line of the incision of the mucous border of the mouth, and within a week the swelling which resulted from the operation had passed away and the success of the operation, so far as concerned the sufficiency of support, was demonstrated. The patient has now worn this for nearly a year without the slightest discomfort, and, without being exactly a thing of beauty even in the improved condition, is a source of joy to herself from that time to this. The platinum support can be seen by inspection through the nostrils. It is firm, gives rise to no trouble or discharge whatever, no tenderness, and the patient would not know it was there unless she had been told of it or had discovered it by digital examination. I have resorted to the method twice since with equally favorable results. In the second case the patient has worn the support eight months without irritation. The last case, one week old, is shown you this evening.*

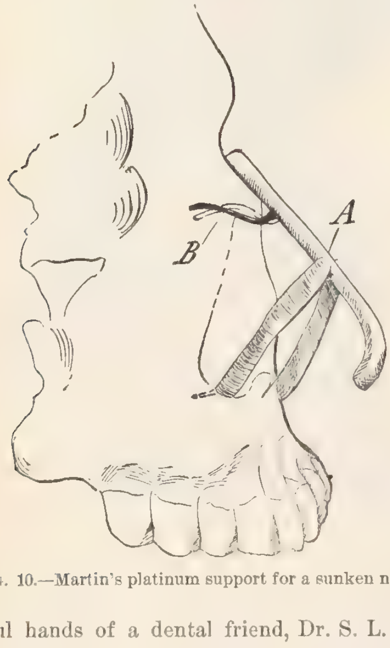

Fig. 10.—Martin's platinum support for a sunken nose.

Some few more words may be permitted in connection with this department of surgery. In 1885, some time prior to the publication of Roe's able article on the subject of The Deformity termed Pug Nose and its Correction by a Simple Operation (*Medical Record*, June 4, 1887), wherein a similar procedure is advocated—

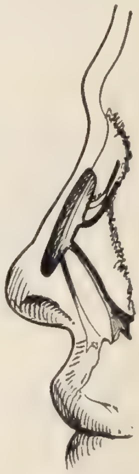

Fig. 11.—A modification of Martin's nasal supporter, to be used when the nasal end is firm and only the central part requires elevation.

I was called upon to relieve the distress that was occasioned in the mind of a gentleman well known in social circles by the presence of a nose which he considered with some justice (Fig. 12) to be unduly large. This goodly sized organ was intensified by a somewhat receding chin and diminutive mouth. He had become so much perturbed in mind concerning the unsightliness of his nose that it became more than an operation for the relief of a cosmetic annoyance. It seemed to his physicians and relatives essential to the preservation of the balance of his mind that some attempt should be made to relieve him of what he persistently dwelt upon as a distressing deformity. With the consent of his attending physicians, Dr. Satterlee and Dr. Polk, I took out a triangular portion of the sæptum narium (Fig. 13), fully a quarter of an inch in width at the columna, its apex running up and encroaching upon the ethmoid sæptum. The nose, moreover, at this point was forced downward toward the face, and the cartilage and the divided columna sutured together by fine sutures. To accommodate this sinking of the nose, by means of my nose forceps† (one blade inside the nose and the other outside), the nasal bones at their lower borders were also crowded backward and inward and then to a slight degree flattened.

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* Of which Ollier (*Revue de chirurgie*, 1890, p. 828) said that he preferred the simple autoplasty over the metallic apparatus of Martin to the use of osseous or periosteal flaps.

† These should be, according to Martin, half a millimetre in thickness and seven millimetres in width. These are curved on themselves and soldered together by gold solder, or sometimes cut out in one piece.

* In this case a variation in the support was made, as seen in Fig. 11. The plate of platinum is shorter, less than an inch in length, and the legs were made of sharpened, hard platinum wire.

† *Medical Record*, *loc. cit.*

This operation was done with most gratifying success (Fig. 14). The nasal prominence at the tip, particularly the unsightly portion in the otherwise fairly straight nose, was diminished, and the patient's mental relief was correspondingly great for a time. However, at the end of a couple of months, with the aid of incessantly looking at himself in the glass, he arrived at the conclusion that something more should be done to his nose—this time that the slightly increased breadth of the nostril should be remedied. This was very readily accomplished by an incision along the curve made by the attachment of the nose to the cheek, and there slicing off a small beveled portion of the nose and reuniting the divided edges by sutures. This was followed by no apparent cicatrix whatever. A year later this monomania, for such it was, developed itself in a further desire to have something more done to the nose. This I was unwilling to do, because I considered it a first-class nose as it was, but only upon the intercession of his family, which they, moreover, clinched by giving me voluntarily a statement in writing that the operation was done at the patient's and their own request, did I consent to accomplish what he wished, which was that the nose should now be shortened. The nose had by the previous operation been rendered less prominent, and its lateral dimensions had been reduced satisfactorily, but, from being brought a little closer to the line of the face, it struck him as being a little longer. His aim in life was then to have this nose made shorter—a problem for which I could find no help in my reading. It was, however, accomplished in the following way:

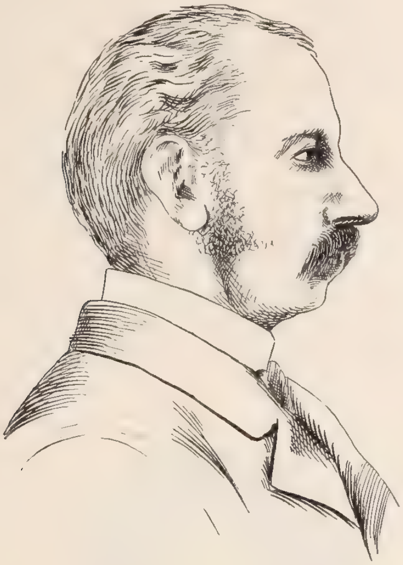

FIG. 12.—Before operation.

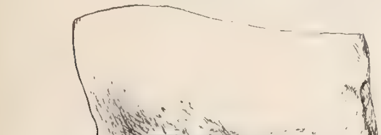

FIG. 13.

The columna was divided in the line of the old cicatrix. The ala on each side was separated from the cheek through the previous almost invisible cicatrices. After dissecting off the anterior portion of the columna from the cartilage, this dissection was carried along exterior to the lateral cartilages, so that the thick skin constituting the knob of the nose, for a distance of, say, half an inch above its tip, was freed from the subjacent cartilages and tilted upward. The cartilages were then trimmed off and shortened as required and the skin replaced. The result was a very satisfactory one.

This completed the surgery of his nose, with one slight exception, which took place several months later. The original opening inward of the nose had intensified the naturally slight hump that many of us have at the junction of the bony and cartilaginous structures. This he insisted upon being removed, and it was done by a slight beveled incision on one side, which permitted, after raising up the skin, careful chipping off of the offending cartilage by means of a fine engraver's chisel. The wound healed without a perceptible scar. I would remark here that I have since twice removed such humps by incisions conducted, as had lately been published by Dr. Roe,* by getting beneath the skin from the nasal passages, and, with properly shaped knives, or chisels, which I like better, have cut off sundry portions of the projecting mass.

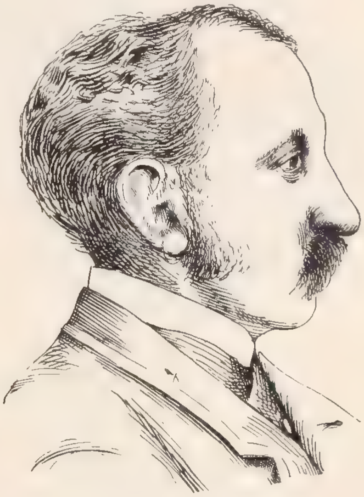

FIG. 14.—After operation.

This interior incision is much more difficult and unsatisfactory than the one I resorted to in the case just given; but in women it probably is the better one.

For the relief of twisted noses, meaning those bent in the cartilaginous portion (Fig. 15), or where even the osseous portion has been deviated also on the same side, requires much more interference than is supposed. The bent portion of the bony part I yet like best to accomplish by means of a fine chisel introduced through the skin, chiseling off the nasal bones on both sides from their maxillary attachments, and cutting through the sæptum. This is all accomplished through one opening. It rarely requires a second opening on the other side. Sometimes the replacement of the bony deviation carries with it and remedies the deviation of the cartilaginous sæptum; but, as a rule, I have found the cartilaginous sæptum requires to be very freely divided. This division, in my hands, has been most certainly done by the introduction of a knife somewhat similar to an angularly bent iridectomy knife, which should cut through the cartilage up to the very skin; of course, not through it, but as near as possible to the bony junction, and going backward some distance in the cartilaginous sæptum. This is to be supplemented by one or two similar incisions through the cartilaginous sæptum, running likewise to the skin at points lower down. In one case I found it necessary to join these incisions running from the front of the nose backward in the cartilaginous sæptum, by an incision parallel to the free border of the nose, by which the two incisions were joined deeper in the nose, and in that way a movable portion of the cartilaginous sæptum left for me to act upon. But it must be distinctly understood that in conducting an operation for this end a perfect restoration must be accomplished at the time of the operation, and it must be capable of being maintained without any force, or retention pads, or apparatus. A deviation that requires force to hold it in position, while the patient is yet under an anæsthetic, is sure of defeating the aim of the operator. It is best, therefore, to overdo the operative procedure, either by force or freedom of incision, so that the nose will retain its proper shape at the conclusion of the surgical work. In addition, it must be emphasized that further improvement must not be hoped for by the use of pluggings of iodoform gauze or plugs of other material introduced into the nostril or nostrils. They are only serviceable, in my opinion, to prevent the nose from slipping out of position by incautious movements or other accident. Plugging with iodoform gauze I like best for the interior retention work, because it accomplishes at the same time an antiseptic purpose. I have been much pleased also with the plugs that have been made of cork and covered with collodion, as suggested by Dr. French, of Brooklyn, which I used in one case successfully in conjunction with him, where a deviated nose, with an imperfectly operated upon hare-lip, was brought into proper shape by this free division of the sæptum. At the same time the hare-lip operation was done over again in a more satisfactory manner. (Figs. 16 and 17.)

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* *Medical Record*, July 18, 1891.

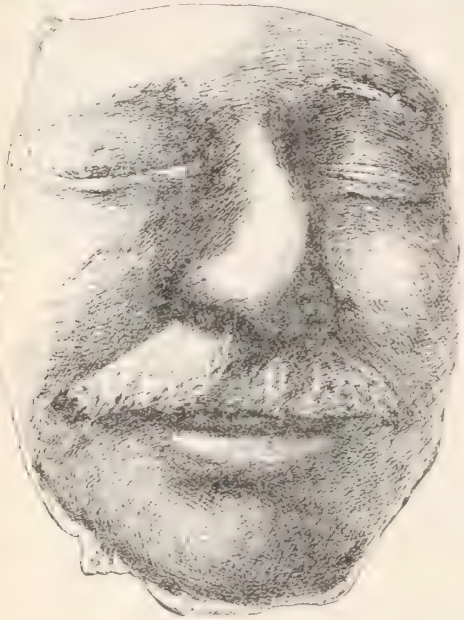

Fig. 15.

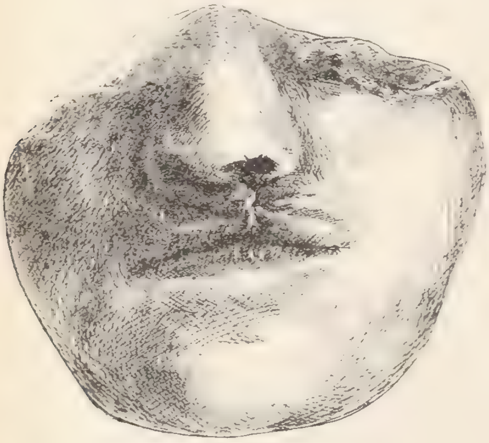

Fig. 16.

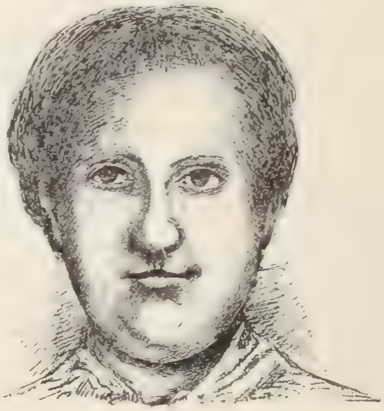

Fig. 17.

I may say here, in this class of nasal deformities, that the flattening of the nose, which is sometimes associated with a successfully treated hare-lip, can be relieved by the same incision under the lip, freeing the nostril on that side, and holding the restored nostril in position by a suture, which, securing itself in the cartilage of the ala of the flattened side, is passed across the sæptum to the cartilage on the other side, which is to be left fixed to the jaw bone. This suture was, in two of my cases, retained *in situ* in this way for a week or ten days with a satisfactory result.

37 West Thirty-third Street.

DETAILS OF A PRACTICAL COURSE OF MANIKIN INSTRUCTION IN OBSTETRICS.

By ROBERT L. DICKINSON, M. D.,
LECTURER ON OBSTETRICS AND ASSISTANT OBSTETRICIAN TO
THE LONG ISLAND COLLEGE HOSPITAL.

In order that a medical school may be able to graduate men rightly qualified to do obstetric work in private practice, it is not enough to give them lectures and a few labors. They must be drilled in methods of diagnosis and the steps of the ordinary obstetric procedures and operations. To accomplish this there are two ways: either with an abundance of clinical material among patients who are so obtuse that they are indifferent to the presence and examinations of students—a condition of affairs unknown in this country

—or else by a course of training on effective manikins that fairly imitate Nature. This prepares students for a moderate experience in the wards, which the preliminary drill has fitted them to appreciate and get the most benefit from.

For eight years I have been systematizing the following course, which covers all that can be taught in twenty to twenty-five fifty-minute lessons for each student, allotting six men to a manikin.

We have a corps of ten instructors and five manikins. The work falls into the last two years of the college course, the junior instruction being rather more elementary than the senior teaching.

Outfit.—Each manikin is set in a separate compartment formed by curtains to keep the attention of its students from the operations on the other manikins. Each instructor is provided with a table for his manikin, a bony pelvis, a fœtal skull, chamois fœtus, fœtal cadaver, rubber uterus, rubber amnion, rubber detachable vulva and vagina, detachable abdominal walls, towels, soap (as a lubricant), and the schedule of the course. The dynamometer, swinging from a tripod over another table so that a manikin can be slipped under it when it is needed, is for general use, and there need be only one outfit for ballottement. A roomy sink, jars for the fœtuses, and the necessary shelving complete the equipment.

The various manikins have been ably and fully described and pictured in Dr. J. Clifton Edgar's paper in the *New York Medical Journal* for December 27, 1890.

The fœtuses should be full term and up to six or nine months of age. They are best injected over night with arsenious acid, six parts; carbolic acid, six; glycerin, ten or less; acetate of sodium, ten; water, seventy-six—by a gravity syringe with a very moderate elevation (two to four feet), lest the heads become overdistended. The brain is hardened with a saturated solution of bichromate of potassium, with bichloride of mercury, eight grains to the pint, injected with a long needle through the bregma into various parts of the organ. The cadaver is kept in alcohol, but is occasionally left out to harden a little in the air.

The instructions here given are detailed, because every teacher needs a system to make his course orderly and symmetrical, and needs memoranda which will prevent omission of the lesser items. Any number of details can be worked out further, according to the time at his disposal. The unoccupied students must be kept alert by calling for suggestions and criticism on the student who is operating, by requesting them to assist, and by asking them questions concerning matters bearing on the procedure under way, as, for instance, during a version, the indications, preparations for operation, best position of patient, dangers, mortality, relative value of the methods, and whether immediate extraction is best or not.

My schedule does not purport to be complete. But it does purport, among the scant and hurried courses of most colleges in Europe and America, to be a step in the right direction. Meanwhile much remains to be done. To those who are interested in this method of teaching the illustrated and elaborate text-book by Farabœuf and Varnier (*Introduction à l'étude clinique et à la pratique des accouchements*, Paris, Steinheil, 1892, costing about $4) will prove a mine of information, with clear picturing of every step of each procedure.

Heartiest acknowledgments are due to Professor Charles Jewett for his encouragement and help in this course, and to the staff of instructors, Dr. Northridge, Dr. Day, Dr. Pomeroy, Dr. Sullivan, Dr. Bostwick, Dr. Clowminzer, Dr. Truex, Dr. Grover, Dr. Polak, and Dr. Ward.

BALLOTTEMENT.—(Signs of pregnancy; other signs in the ward.)
  Manikin in semi-recumbent position; rubber amnion, containing glass-ball pessary accurately weighted with shot, suspended over the pelvis.
  Available when? Fifth and sixth months.
  Position of patient? Semi-recumbent.
  Pressure made where? Against anterior uterine wall, above cervix.
  How made? Toss, and wait for rebound.

ANATOMY OF THE PARTURIENT CANAL.
  Let students demonstrate each point with the pelvis and fœtal skull; later, with the fœtus and manikin.
  Constituent parts: Ossa innominata; sacrum; coccyx.
  Joints: Symphysis pubis; sacro-iliac; sacro-coccygeal.
    Amount of motion in each; pivoted sacrum; hinged coccyx.
  False pelvis: Ilio-pectineal line.
  True pelvis: Brim; synonyms, inlet, superior strait, margin.
    Shape and boundaries.
    Landmarks about the brim; promontory; ilio-pectineal eminences; sacro-iliac joints; symphysis pubis.
  Outlet; synonyms.
    Shape and boundaries.
    Landmarks at the outlet; tip of sacrum; sacro-sciatic ligaments; ischial tuberosities; ischial spines; subpubic arch; angle of arch.
  Cavity: Posterior wall; form and length.
    Anterior wall; form and length.
  Planes: Meaning of word; plane of brim; of outlet.
  Internal diameters: Describe and locate each.
    Brim: True conjugate.......... 4 inches.
      Oblique.................. 4½ "
      Transverse.............. 5 "
      Diagonal conjugate....... 4¾ to 5 in.
      Measure diagonal conjugate on several abnormal pelves.
    Outlet: Antero-posterior......... 5 inches.
      Oblique................. 4½ "
      Transverse.............. 4 "
  Dynamic pelvis: Longest internal diameter? Right oblique at brim owing to encroachment of muscles on the transverse.
  External diameters:
      External conjugate...... 8 inches.
      Ilio-spinal.............. 10 "
      Ilio-cristal.............. 11 "
  Pelvic floor: Define; what structures? principal muscles? A paper model of levator is easily made.
  Parturient axis:
      Axis of inlet of pelvis.
      Axis of outlet of pelvis.
      Axis of outlet of soft parts.
      Axis of birth-canal from fundus to vulva.

OBSTETRIC ANATOMY OF FŒTUS.
  Bones of cranial vault: Occipital; parietal; frontal; temporal.
  Sutures: Sagittal; frontal; coronal; lambdoidal.

Fontanelles: Anterior—location, size, shape, number of sutures, bregma.
Posterior—ditto; peculiarity of tip of occipital bone.
Protuberances: Occipital; parietal; frontal.
Vertex; occiput; sinciput: Define and locate each.
Measurements of fœtal head; locate and give measurements:

Biparietal	3½ inches.	
Fronto-mental		
Suboccipito-bregmatic (3¾)		
Occipito-frontal	4½ "	
Occipito-mental	5½ "	

Trunk diameters:

Bis-acromial	4¾ "	compressible
Bitrochanteric	3½ "	

PRESENTATION.

Definition; (demonstrate each with fœtus and manikin).
Varieties:
  Longitudinal:
    Cephalic—vertex; face; brow.
    Pelvic—breech; knee; feet.
  Transverse:
    Shoulder; arm.

POSITION.

Definition; (demonstrate with skull, pelvis, fœtus, and manikin).
Four positions of each presentation:
L. O. A., R. O. A., R. O. P., L. O. A.
L. M. A., R. M. A., R. M. P., L. M. P.
L. S. A., R. S. A., R. S. P., L. S. P.
L. Sc. A., R. Sc. A., R. Sc. P., L. Sc. P.; R. or L. according to head; A. or P. according to back.

POSTURE.

Definition (demonstrate).
Examples (as well-flexed or partly extended head).

PRESENTING PART.

Definition.
Demonstrate on fœtal cadaver the characteristic landmarks of vertex; breech; face; shoulder; knee; elbow; hand; foot.

ABDOMINAL EXAMINATION a month before labor; made in this order:

1. Search for back and small parts:
   (Hand on fundus—
   a. Circling motion;
   b. Pushing motion.)
2. Search excavation (inlet of pelvis):
   (Facing feet of mother—
   a. The hands well apart, palms facing, finger-tips reach into brim;
   b. One hand arched across hypogastrium.)
3. Search fundus of uterus:
   (Facing face of mother.)
4. Locate shoulder:
   (Gentle touch, working up from symphysis.)
5. Locate fœtal heart.

Teach first the method of executing each step of the examination; then the whole in order; then go on to the next table.

VAGINAL EXAMINATION, to be made in this order:

Vulva: Old injuries? rigidity? œdema?
Vagina: Well lubricated? dry?
Rectum: Full or empty?
Pelvis: Diagonal conjugate measures? outlet?
Cervix: Old injuries? dilatable? how much dilated?
Membranes: Ruptured? watch-glass or glove-finger? adherent?
Presentation.
Position.
Posture.
Stage of progress: 1st stage: amount of dilatation and dilatability?
2d stage: comparison of presenting part with symphysis, sacrum, and pelvic floor.

Teach that a method or regular order in examining should be acquired; then go on to give cases. Tell the junior what he is examining, but let the senior find out. If you have a fresh placenta or cord, placenta prævia or prolapsus funis can be given without warning.

In vaginal examinations of left positions, as L. O. A., L. S. P., the right hand works best; for right positions, the left.

	Abdominal examination.	Positions.	Vaginal examination.
Occipito-anterior.	1. Back to the front. 2. Head in brim.	L. O. A.	Hard globe. Sutures, sagittal and lambdoidal.
	3. Breech in fundus. 4. Shoulder near median line. 5. Heart below navel.	R. O. A.	Posterior fontanelle: three sutures; tip of occipital bone depressible, small size.
Occipito-posterior.	1. Small parts in front. 2. Head in brim, face prominent over symphysis.	R. O. P.	Hard globe. Sutures, sagittal, coronal, frontal.
	3. Breech in fundus. 4. Shoulder far from median line. 5. Heart below navel, faint.	L. O. P.	Anterior fontanelle: four sutures, large size.
Breech.	1. Back or small parts in front.	L. S. A.	Tuberosities of ischium.
	2. Brim empty, fingers meet beneath.	R. S. A.	Sulcus, in which are coccyx, anus, genitals (knee, foot).
	3. Head in fundus, ballottement, with gully where neck is.	R. S. P.	
		L. S. P.	
	5. Heart above navel.		(Give cases with contracted pelves.)
Face.	Too difficult. Only found presenting during labor, when the uterine contractions make a diagnosis almost impossible.	L. M. A.	Orbital ridges.
		R. M. A.	Nose.
		R. M. P.	Mouth, alveolar ridges.
		L. M. P.	Chin.
Transverse.	Broad, squat uterus.	L. Sc. A.	Early; presenting part is out of reach.
	Head in one iliac region.	R. Sc. A.	Shoulder, axilla, scapula, ribs, abdomen, cord.
	Breech in other iliac region.	R. Sc. P.	
	Brim empty.	L. Sc. P.	Elbow, hand. (Give contracted pelvis without warning.)
Twins.	Size of tumor; shape of tumor; greater width; longitudinal sulcus. Multitude of small parts; two dorsal planes; three or four fœtal poles. One head in excavation and one in upper uterine segment. One head in excavation and one in iliac fossa. Distance from pelvic pole to fundal pole over 12 inches.		Rapidly successive presentation of head and breech.
Hydramnion.	Size and shape of uterus. Tension. External ballottement.		Ballottement.

NOTE.—With juniors, show what the case is before examination; with seniors, give cases for diagnosis.

Mechanism of Labor.

Demonstrate with skull and pelvis, and with fœtus and manikin, mechanism in:

Vertex:	Occipito-anterior:	Flexion; rotation; extension; restitution.
	Occipito-posterior:	Rotation to occipito-anterior. Persistent occipito-posterior. Movements of each. Where the rotation occurs.
Face:	Mento-anterior:	Extension; rotation; flexion; restitution.
	Mento-posterior:	Same movements. Rotation to mento-anterior. Impaction if persistent.
Breech:	Show the danger and difficulty of extended arms. Show how head should come through pelvis; long diameters of head and brim agreeing.	
Transverse:	The small chance of spontaneous version or spontaneous evolution.	

Asphyxia of the New-born.

Simple measures:

Blowing on face; dash of cold water; friction of spine; hanging by the heels; removal of mucus from pharynx by gauze or catheter; immersion in hot water.

Direct insufflation:

Extension of head over edge of basin or bed, child on back.

Cleanse face and cover with clean towel.

Press a knuckle firmly into epigastrium to prevent inflation of stomach.

Apply mouth over child's mouth and nose; blow gently twenty times a minute; squeeze thorax for expiration.

Jaw may have to be held forward or tongue out.

Sylvester's method:

Child supine, tongue drawn out with forceps.

Draw arms well above head for inspiration.

Swing them down by the sides and compress thorax for expiration.

Schultze's method:

Suspend child by the shoulders, face from operator; thumb in front and fingers over posterior aspects of shoulders, with index fingers hooked in axillæ—inspiration.

Swing trunk and lower limbs upward toward face of operator, flexing trunk in lumbar region—expiration.

Breech Deliveries.

1. Preserve membranes: to secure full dilatation of cervix.
2. Avoid traction on breech, lest extension of head and arms occur.
3. Deliver head rapidly: child dies of asphyxia in a few minutes (five).

Methods.

Wrap legs and body of child in a towel, to prevent chilling and premature respiration.

If arms are flexed against the body:

1. Draw trunk to one side in order to twist posterior shoulder into hollow of sacrum.
2. Pass fingers or hand into pelvis with palm facing child's abdomen, seize elbow, sweep it across chest, and down and out.
3. Rotate trunk to bring remaining shoulder into sacral hollow, and go in with the other hand to extract as before.

If arms are extended:

1. Draw trunk to the side opposite the occiput.
2. Slip fingers or hand under symphysis along child's humerus to its elbow, and sweep arm across face and down.
3. Rotate body to bring remaining shoulder toward sacrum, and with other hand repeat the process at the same time that the arm is being swept across, rotate head by the other hand on the hypogastrium.

To deliver the head:

Keep the long diameter of the head in the long diameter of pelvis (in the oblique at the brim, antero-posterior at outlet).

a. Smellie-Veit (Mauriceau).

One finger on each canine fossa, to maintain flexion—not for traction.

Two fingers of the other hand hooked over shoulders astride of neck to make traction (up to forty pounds; demonstrate forty pounds on dynamometer).

Assistant carries trunk upward, and presses on head from above.

b. Wiegand-Martin.

Finger in mouth, thumb against angle of jaw, for flexion.

Other hand presses on head above pubis.

Trunk lies along operator's arm.

c. Failing, raise body well and apply forceps to head.

Dorso-posterior positions:

As the trunk is delivered, carefully rotate back to the front.

Impacted breech:

Finger, fillet, forceps.

Finger or fillet over groin.

Forceps; one blade over sacrum and ilium, other over opposite thigh.

Pass hand in and bring down leg in some cases.

Extraction of breech:

Where one foot is down and traction is necessary to deliver, it may be made on the leg if it is the anterior one; if the posterior, rotate the trunk to bring the leg anterior.

Forceps.

Schedule for manikin work.

1. Application.
2. Dynamometer.
3. Low operation; *a* and *b*.
4. High operation; *a* and *b*.
    - *a.* Easy delivery, to teach the motions, and right direction of traction, watching that there is no pressure on soft parts by the blades.
    - *b.* Difficult delivery, so that slow molding occurs, using large head and many tractions. Pass a cord or towel across tips of blades and tie, when heads are very large, round, and slippery.
5. Tarnier forceps.

(Kind of forceps—rust—re-nickeling—handles baked on.)

Preliminaries.

Cervix dilated, or nearly so; head engaged; membranes ruptured; bladder and rectum empty; certainty as to diagnosis; anæsthesia usually; sterilization of hands, genitals, and instruments.

Sterilization.

Scrub well with soap; boil half an hour (in the kettle).

1. Put the forceps together, off-hand.
2. State which blade goes in first.

Application.

1. Examine to make sure of position, with hand slipped into pelvis (look for fontanelles, *ear*, cord about neck).
2. Guide blades by slipping fingers or hand ahead of them (into the cervix). Let the blades hug the head. Use no force either in applying or locking. Second blade differently applied from the first. Follow sacral curve.
3. Examine seizure thoroughly, so that slipping shall not occur later.
    - *a.* High position of head: blades will be entered as far as the lock, handles pointing toward floor.
    - *b.* Low position: handles nearly level.

Dynamometer.

1. Pull thirty to thirty-five pounds (easy traction).
2. Repeat the same without seeing the scale, slowly, steadily.
3. Pull seventy to eighty pounds (strong traction).
4. Repeat the same without seeing the scale, steadily.

See to it that the handles point in the right direction.

Watch that the blades make no pressure on the pelvic brim.

Extraction.

1. Guide to the direction of the traction in high operation is the back of the symphysis.

2. When the head begins to distend pelvic floor, and occiput is free from the subpubic arch, change the direction of the pull.
3. Guide in low operation: raise the handles gradually, keeping the edges of the blades comfortably fitted to the pubic arch.
   - Intermittent tractions.
   - Very slow extraction through the vulva (thirty minutes in actual practice).

Occipito-posterior positions of head.

- Tarnier or ordinary forceps may be used.
- Better to *rotate* before forceps.
  - *a.* Pass hand into vagina, seize the head and turn, rotating the body with external hand (remembering that the head dare not turn much more than a quarter-circle); failing—
  - *b.* Pass the hand farther in, and turn body by seizing a shoulder.

Face.

1. Chin to the front, delivery with forceps.
2. Chin to the back, rotation and delivery with forceps.
3. Head not firmly engaged, convert into vertex presentation by method of Baudelocque, passing hand in to seize the occiput; or of Schatz, by external manipulation.

Version (podalic version).

1. *External version:*
   - Fœtus in rubber uterus filled with water; padded abdominal wall.
   - Hands on abdomen, one on each end of child; push the head toward the occiput, the breech toward the feet; the motions to be alternating.
2. *Bipolar version:*
   - First, a transverse presentation in dorsal position of manikin, without uterus.
   - Outer hand over breech through abdominal wall.
   - Inner hand, two fingers to be passed through cervix.
   - Toss head out of pelvis into that iliac fossa toward which occiput points.
   - Push breech toward the side on which the feet lie.
   - Toss trunk along in the same direction inch by inch until knees present.
   - Draw down knee, or both knees and feet.
3. Repeat the process, converting head into breech presentation (and, if possible, try it in the lateral position on Parvin-Edgar manikin, with a rubber uterus).
4. *Internal version:*
   - First, a transverse presentation in dorsal position of manikin; instead of rubber uterus have four students make with their hands an artificial uterine wall, to imitate the resistance, the pains, and the close fit when the waters have drained away.
   - Choice of hand.
   - Lubricate hand, cone it, and pass it into the uterus between pains, along the child's abdomen, its palmar surface toward the child.
   - Seize the remote foot, or knee, or both feet, assisting internal hand by outside pressure.
   - Push upward on head with external hand.
   - Sling or towel on extracted foot gives better hold.
   - Extraction of child may be omitted to save time.
5. Repeat process, converting head into breech presentation with the manikin in the knee-chest position (Parvin-Edgar manikin, rubber uterus).
6. Repeat with transverse and prolapsed arm.
   - Sling to be noosed on the wrist; try as before.
   - Failing, humerus may be used as a lever to push shoulder along

Prolapsus Funis.

Methods of reposition:

1. Postural: Knee-chest, or latero-prone posture.
2. Manual: Twist the prolapsed cord lightly into a rope, and replace anteriorly.
   - Detain by passing over a knee and crowding presenting part down.
3. Instrumental: Tie to an English catheter, carry it to fundus, leave it.
4. Operative: Forceps or version.

Tampon.

1. For hæmorrhage during abortion, with the cervix undilated.
2. For the hæmorrhage of placenta prævia, with the cervix undilated.
3. For post-partum hæmorrhage, filling the uterus and vagina: Sims's posture, Sims's speculum, a long dressing forceps, iodoform gauze.

Review.

Give cases for full diagnosis and treatment; for instance:

1. 3½-inch true conjugate, occipito-posterior, head not engaged, followed by post-partum hæmorrhage.
2. 3½-inch transverse at the outlet, head engaged, stationary for an hour, with the cord around the neck, and difficult passage of the shoulders.
3. Breech, L. S. P., the rear leg expelled as far as the calf, followed by asphyxia of the child.
4. A typical case for Cæsarean section.
5. A typical case for craniotomy.

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CAN A SEPTIC BULLET INFECT A GUNSHOT WOUND?

A SPECIAL REPORT TO THE SURGEON-GENERAL, U. S. ARMY.

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I believe it is generally held by surgeons, and bacteriologists as well, that the amount of heat imparted to a bullet upon firing it from a weapon is sufficient to destroy any organism that might be placed upon it.

Naturally enough, we know that there is some heat imparted to the projectile by the ignition of the powder, the friction encountered in the barrel, and the atmosphere, and, lastly, we know that when the momentum of a bullet is suddenly arrested by colliding with a hard resisting surface, there is additional heat imparted to the missile and target at the moment of impact. I am informed it is difficult to ascertain the exact amount of heat imparted to projectiles of the different portable weapons, and I am, therefore, unable to state what the amount of heat may be for the small leaden bullets impressed with the velocity of an ordinary revolver, for instance.

Dr. B. von Beck, Medical Director, Fourteenth Army Corps, of the German Army, to whom we owe much of our knowledge of the character of wounds inflicted by the rifles of small caliber, conducted some experiments to determine the amount of heat imparted to the leaden bullet of large caliber as well as the amount of heat impartde to the hard bullet of small caliber, having a mantle of steel or copper. He fired into a target made of boards and thin sheets of iron arranged alternately about an inch apart. He recovered the projectiles as soon as possible after firing, never allowing more than ten seconds to intervene between the firing and the recovery of the missiles. The latter were dropped into three hundred grammes of mercury in a paper box seven centimetres high and three centimetres wide. By means of a cork fixed on the bulb of a thermometer he held the projectile under the mercury and noted the rise of temperature of the metal. By this method he conducted many experiments, and he says that the missiles were invariably handled by the fingers and that they never possessed heat sufficient to burn the skin. After making allowance for specific heat and the conductivity of the different metals entering into the composition of the projectiles used, he found that even when the projectiles encountered resistance from three to four times greater than that offered by the human body, the results were as follows:

Temperature of the leaden bullet of ·45 caliber, when recovered	69° C.
Temperature of the leaden bullet of ·30 caliber, covered with steel, when recovered	78° C.
Temperature of the leaden bullet of ·30 caliber, covered with copper, when recovered	110° C.

He states that these experiments overthrow the theory that certain lesions in wounds can be attributed in any way to the heat imparted by the bullet. He believes that the periphery of the projectile is alone heated, because the act of heating is accomplished so instantaneously that the heat can not be conducted lower.

The idea of the poisonous influence of projectiles in gunshot wounds is nearly as old as the use of gunpowder in warfare. Although it has been disputed over and over, yet the use of poisoned bullets is one of the common charges brought against the opposing armies in nearly all wars. As recently as 1870 the Germans accused the French in the Franco-German war of placing poisonous substances in the projectiles of the mitrailleuse.

Longmore, on Gunshot Injuries, 1877, credits Ambroise Paré with being the first among many writers to refute the idea that gunshot wounds were poisonous. On page 90 he states as follows: "Paré answered those who thought that the poison was derived from the gunpowder by showing the harmlessness of its ingredients, separately and combined, when applied locally to parts of the body or taken internally; and he replied to others who thought that the poison sprang not from the gunpowder, but from some poisonous substance mixed with the lead, or from the bullet being steeped in some poisonous liquor, by showing that if this poisoning could be practiced, the flame of the ignited powder in the gun would cause the poison to be dissipated before it could reach and infect a person who might be wounded by the bullet. But though Paré refuted the doctrine of the poisonous nature of gunshot injuries, not only by arguments, but by his successful treatment with simple remedies, the belief continued to prevail for a long time after Paré wrote, not only among combatants, but also among surgeons."

Longmore, on page 90, again refers to the subject by citing Pierre Dailly among the adherents of the doctrine that gunshot wounds are poisonous. In a note to page 90 the argument of Dailly in support of his doctrine appears as follows: "Though the constituents of gunpowders are harmless separately, they acquire a poisonous quality when mixed; when forced into a porous leaden bullet, though itself small, it retains sufficient to acquire a poisonous influence; that balls and other foreign bodies which inflict wounds are very often designedly poisoned by malice of enemies by being steeped in poisonous juices of which part are retained enough to infect the frame of a wounded man; that common observation shows that gunshot wounds, though slight, become great and incurable and finally cause death; and that the wounded are attacked with faintings, palpitations, *maux de cœur*, mortification of limbs, and various accidents, which would be otherwise inexplicable."

On page 91, in a discussion which took place in 1848 before the Academy of Medicine of Paris, upon which occasion it was generally believed that gunshot wounds were not poisoned, M. Velpeau is quoted as follows: "There is still a question of the poisoning of gunshot wounds on every occasion of insurrectionary fighting by armed citizens. It is not that I believe in the poisoning of the wounds by the projectiles themselves; I can scarcely conceive it to be possible for bullets to deposit in the tissues which they traverse any substance capable of compromising the life of a wounded man; either I am very much deceived, or all that has recently been said on this point should be classed as fables created by fear or love of the marvelous."

Clowes, among the writers in Great Britain, taught that gunshot wounds, though not always poisoned wounds, were so occasionally. A note to page 92 gives his experiment to determine "whether the flame of the ignited gunpowder could exert such an influence during the discharge of the shot as to destroy any poisonous material which might previously have been impressed on the bullet, and he considered that his experiments proved that the flame could not burn out the impression of a poisoned bullet." The note referred to reads as follows: "Clowes, to determine whether the flame of the fire out of the piece doth extinguish and kill the force and strength of any poisoned shot, got the master gunner at Portsmouth to let one of the soldiers fire an arrow out of a musket. The soldier, taking his rest at two hundred paces, caused the arrow to stick deeply in the post of a gate, when it was found not one feather was touched with the flame or fire."

With the exception of this experiment of Clowes's I am unable, after careful examination of many references on gunshot injuries, to find any attempt to arrive at the truth of this subject by experimentation.

As a preliminary to the work of noting the effects of firing bullets that had been previously contaminated, it was considered proper to ascertain the condition, bacteriologically speaking, of bullets in their original packages. This was done with the result shown in the subjoined table, A.

We find that out of twenty-six gelatin rolls (Esmarch plates) examined, there were altogether twenty-six colonies, and that fourteen of the plates had no colonies, while the remaining twelve plates contained a total of twenty-six colonies with a maximum of four and a minimum of one. Since each plate represents the number of micro-organisms on one bullet, we conclude from these data that fifty-three per cent. of the missiles examined were absolutely sterile and that the remaining forty-seven per cent. were practically so.

TABLE A.

Cultures from Bullets taken out of Original Packages.

Date, 1892.	No. of cultures	Caliber.	Whence obtained.	edium in which bullets were placed.	Date of observation.	Result in colonies.
May 31. .	1	·22	Ammunition-store in Baltimore.	Gelatin roll.	June 5.	1
June 2. .	2	·22	"	" "	June 7.	. .
"	3	·22	"	" "	"	1
"	4	·22	"	" "	"	. .
"	5	·22	"	" "	"	. .
"	6	·22	"	" "	"	1
"	7	·22	"	" "	"	. .
"	8	·38	"	" "	"	2
"	9	·38	"	" "	"	. .
"	10	·38	"	" "	"	3
"	11	·38	"	" "	"	. .
"	12	·38	"	" "	"	2
"	13	·38	"	" "	"	. .
"	14	·38	"	" "	"	1
"	15	·38	"	" "	"	. .
"	16	·38	"	" "	"	1
"	17	·38	"	" "	"	. .
"	18	·38	"	" "	"	4
"	19	·38	"	" "	"	. .
"	20	·38	"	" "	"	. .
"	21	·38	"	" "	"	2
"	22	·38	"	" "	"	. .
"	23	·38	"	" "	"	. .
"	24	·38	"	" "	"	2
"	25	·38	"	" "	"	. .
"	26	·38	"	" "	"	3

Examination of a number of bullets from the same source since the data were collected in Table "A" fails to show any pyogenic bacteria.

These results are what we might expect, when we consider the process employed in the manufacture of cartridges in detail.

Ordnance Memoranda, No. 8, of the United States army, 1870, describes the method of manufacture of the center-fire metallic cartridge, which is about the same as that employed by private firms.

Although there have been some improvements in the process of manufacture since the circular was issued, the employment of heat and the use of acids and alkalies remains about the same.

The cartridge consists of the following parts:

1. The case of copper or brass.
2. The cup anvil.
3. Half a grain of percussion composition.
4. Seventy grains of musket powder.
5. A lubricated leaden bullet weighing four hundred and fifty grains.

During the manufacture of the copper cases they are annealed once or twice by subjecting them to a red heat in a charcoal fire. They are subsequently treated once with a solution of sulphuric acid in water (1 to 15), and twice finally with a solution of caustic potash and caustic soda, one pound and a half of each to five gallons of water, after which they are thoroughly dried in a drying-room at a temperature of 125° F.

The lead of which the bullets are made is melted and skimmed of dross, after which it is cast into cylindrical molds of suitable diameter and length. The subsequent steps of compressing the lead and cutting the bullets into proper length is done entirely by machinery.

The act of loading is also accomplished by machinery, and before each bullet is pressed into its copper case its surface and cannelures are lubricated by a mixture of grease and wax which has been previously subjected to a high temperature.

The cartridges are finally packed and hermetically sealed into paper boxes, the frames and skeleton divisions of which are made of tarred boards. The employment of heat, acids, alkalies, and absolute cleanliness are necessary to insure the keeping qualities of the powder and to obtain constant results in firing.

As additional evidence of the sterile condition of projectiles, we have but to refer to the clinical history of the wounds inflicted by them. The consensus of opinion among surgeons is that gunshot wounds are, as a rule, aseptic, and I believe the data in Table A explain why this is so.

If we make as a contrast experiment a bacteriological estimate of the number of micro-organisms on bullets that have been kept loose in a bureau or wash-stand drawer, or on shelves in a closet, the usual places for storing these projectiles at home, or if we will take cartridges from the belts of men in barracks or from lots that have been lying in camp out of the original packages for some time, not to speak of the cartridges in time of war which are carried by the men in all kinds of weather for days before actual battle, we will find, on dropping cartridges from these sources into gelatin tubes and then converting the latter into rolls, that the number of colonies which will develop under favorable conditions of temperature will not correspond to a maximum of four and a minimum of one, as observed in the specimens examined from the original packages, but that the minimum will be more apt to correspond to scores, and the maximum so great that counting will become irksome.

Knowing that micro-organisms are, as stated, found on unclean bullets, the following experiments were conducted to determine whether germs were still apt to be found on projectiles after firing: To be sure that the germs, if found, emanated from impurities on the bullets and not from the weapon, the weapon employed, a six-chambered Colt's revolver, 0·38 caliber, was thoroughly sterilized by subjecting it to a moist heat in an Arnold's sterilizer for an hour before firing.

Twelve metallic cartridges were thrown upon the floor of an unswept room. The room was then swept and the cartridges and the sweepings placed in a dust-pan, from which the former were taken as often as it became necessary to load the revolver.

At a range of thirteen feet these projectiles were fired upon an iron target enveloped in a wire screen, the target and the screen having been previously sterilized by the flame. As each shot was fired the iron target was slipped out of the screen through a slit at one side and subjected anew to the flame by an assistant while I occupied myself in transferring the pieces of the leaden bullet with sterilized forceps into a test tube of melted agar-agar. This done, the wire in turn was again subjected to the flame and the target put back in place. This process was observed after each shot.

At the end of the firing the test tubes of agar-agar, which had been in the mean time kept at a temperature of 42° to 44° C., were converted into rolls (Esmarch plates). At the end of forty-eight hours, at the ordinary room temperature, the majority of the plates contained scores of colonies. The smallest number of colonies in any of the plates was seventeen.

I should state in this connection that the fragments of lead in the agar-agar showed a great deal of undissolved dirt still adherent to them, and that the number of colonies observed did not in all likelihood represent more than a fraction of the micro-organisms in each tube.

As already stated, clinical evidence teaches us that the majority of gunshot wounds are aseptic. But we know also that pyæmia, erysipelas, tetanus, malignant œdema, etc., do at times occur after gunshot wounds. Such complications are generally attributed to ignorance or neglect on the part of the surgeon in the application of his primary dressing, to unnecessary exploration with septic fingers or probes, or from dirt and pieces of clothing having been forced into the wound by the missile at the time of the injury. From the teachings of the present day, I believe I am correct in stating that a gunshot wound, in which all the faults mentioned have been excluded, would be considered aseptic—free from any inherent danger of infection—by the vast majority of surgeons. Is this so? Could there not be a source of infection which we are overlooking, the elucidation of which might go far to explain conditions that have been very puzzling to us in the past?

The experiments with the bullets which lay in the sweepings before firing would seem to prove conclusively that micro-organisms on bullets are not destroyed by the act of firing, certainly not when fired from a 0·38-caliber Colt's revolver.

Lest there should have been some error in these experiments, I adopted the plan of using a very uncommon germ, and one which, at the same time, possesses the merit of being readily recognized by its morphology and specific effects on animals.

In this connection, therefore, I wish to call attention to the following tables, which give in detail certain experiments made to determine the fate of anthrax in various forms when applied to bullets before firing:

TABLE B.—*Experiments with Infected Bullets.*

(Organism placed in a small hole in the conical end of bullet, the hole being finally sealed with wax.)

Date, 1892.	Range.	Caliber and pattern of weapon.	Organism used.	Sterilized material used as a target to recover bullets.		Media used in making cultures from bullets.			Date of observation.	Result.	Remarks.
				Jute.	Cotton.	Agar.	Gelatin.	Bouillon.			
June 13.	10 ft.	Colt's revolver, caliber ·38.	Anthrax spores.	..	1	1	..	..	June 14, 15, 16, and 17.	No colonies.	Ball recovered in cotton split in two lateral halves. Each half was put into an agar tube, and the latter were converted into rolls.
"	"	"	"	..	..	..	..	1	June 14.	Anthrax.	The ball missed the basket of cotton, struck a brick wall, and bounded back 13 ft. It was immediately picked up with fingers and placed in tube of bouillon.
"	"	"	"	..	..	1	..	..	June 16.	"	The ball missed the basket of cotton, passed into a barrel, was recovered through bung-hole, and put in an agar tube, the latter rolled on ice.
June 14.	"	"	"	..	1	1	..	..	June 17.	"	Ball recovered in cotton, with sterilized forceps dropped in agar, etc.
"	5 ft.	"	"	..	1	1	..	..	June 15, 16, and 17.	See remarks.	As no colonies had formed on the 17th, the bullets were examined, and each orifice was found sealed with the wax. The plug of wax and bullets were dropped into two bouillon tubes. The medium was found swarming with anthrax on the 19th.
"	"	"	"	..	1	1	..	..			
June 15.	"	"	"	..	1	..	..	1	June 17.	Anthrax.	This bullet went entirely through the basket of cotton, and was found on the ground 6 in. from bottom of basket enveloped in cotton.
"	"	"	"	..	1	..	..	1	"	"	Same as preceding result.
"	"	"	"	..	1	..	..	1	"	"	Ball found in cotton in bottom of basket. The heat of cotton was still perceptible, from recent sterilization, by which wax in end of bullet had been entirely melted.
"	"	"	"	..	1	..	1	..	"	"	
"	"	"	"	..	1	..	1	..	"	"	Same as last result.
June 17.	"	"	"	1	..	1	..	..	June 19.	"	The bullets in these experiments were recovered direct from the jute.
"	"	"	"	1	..	1	..	..	"	"	
"	"	"	"	1	..	1	..	..	"	"	
"	"	"	"	1	..	1	..	..	"	"	
"	"	"	"	1	..	1	..	..	"	"	
"	"	"	"	1	..	1	..	..	"	"	

TABLE C.—*Experiments with Infected Bullets.*

(Organism mixed with a mixture of grease and wax (1 to 4), which was applied to bullet at conical end.)

Date, 1892.	Range.	Caliber and pattern of weapon.	Target.	Organism used to infect bullet.	Media used in making cultures from bullets.		Date of observation.	Result.	REMARKS.
					Agar.	Gelatin.			
June 19.	13 ft.	·38 caliber, Colt's revolver.	Iron sterilized.	Anthrax spores.	1	. .	June 21.	Anthrax.	The bullets in these experiments invariably struck the iron target-point end first. They were recovered, as a rule, in a number of fragments with sterilized forceps and dropped immediately into the medium.
"	"	"	"	" "	1	. .	"	"	
"	"	"	"	" "	1	. .	"	"	
"	"	"	"	" "	. .	1	"	"	
"	"	"	"	" "	1	. .	"	"	

TABLE D.—*Experiments with Infected Bullets.*

(Organism placed in concavity of missile next to the powder.)

Date, 1892.	Range.	Caliber and pattern of weapon used.	Target.	Organism used to infect bullet.	Medium used in making cultures from bullets.	Date of observation.	Result.	REMARKS.
June 22.	13 ft.	·38 caliber, Colt's revolver.	Iron sterilized.	Anthrax spores.	Bouillon.	June 25.	Anthrax.	The anthrax spores were placed in the concavity of the bullet with the platinum loop, unmixed with wax and grease.
"	"	"	"	" "	"	"	"	
"	"	"	"	" "	"	"	"	
"	"	"	"	" "	"	"	"	

TABLE E.—*Experiments with Infected Bullets.*

Date, 1892.	Range.	Caliber and pattern of weapon.	Target.	Organism used to infect bullet.	Medium used in making cultures from bullets.	Date of observation.	Result.	REMARKS.
June 27.	13 ft.	·38 caliber, Colt's revolver.	Iron sterilized.	Vegetative form of anthrax.	Bouillon.	June 30.	Anthrax.	The bullets in these experiments were infected on the surface at the conical end with a thin paste made from the organs of a mouse that had died of anthrax the night before.
"	"	"	"	"	"	July 1, 2, 3.	No anthrax.	
"	"	"	"	"	"	"	"	
"	"	"	"	"	"	June 30.	Anthrax.	
"	"	"	"	"	"	"	"	
"	"	"	"	"	"	"	"	
"	"	"	"	"	"	"	"	The bullets in these experiments were infected in the concavity next to the powder with the material above mentioned.
"	"	"	"	"	"	"	"	
"	"	"	"	"	"	"	"	
"	"	"	"	"	"	"	"	
"	"	"	"	"	"	"	"	
"	"	"	"	"	"	July 1, 2, 3.	No anthrax.	

Examination of Tables B, C, D, and E shows that thirty-seven shots were fired into and upon sterilized substances, that the bullets were infected with anthrax in different forms, and that the missiles were recovered and dropped into test tubes containing media of various kinds. The column of results shows that thirty-four out of the thirty-seven bullets recovered were still infected with anthrax. The experiments so far demonstrate conclusively, therefore, that anthrax in any form, when applied to the projectile of the 0·38-caliber Colt's revolver, is rarely, if ever, entirely destroyed by the act of firing.

The results as stated induced me to fire anthrax bullets into animals to determine whether or not this might prove to be a source of inoculation.

On July 7, 1892, two white rabbits were shot at the Johns Hopkins Pathological Laboratory. The weapon used was a 0·22-caliber revolver. The projectiles were previously infected by smearing the conical end of the lead with a culture of anthrax from a slant of agar-agar prepared from the blood of a gray mouse known to have died from the effects of this micro-organism forty-eight hours before.

In the case of the first rabbit the missile passed through the left ear near the skull. The ball penetrated a pine board a few inches beyond, where it was recovered. The animal died July 11, 1892. Cover-slip preparations from the blood stained with a solution of gentian-violet showed anthrax in abundance. The presence of anthrax was shown by Gram's method in the liver, lung, spleen, and kidneys.

In the case of the second rabbit the ball entered the external surface of the left thigh near the hip joint, and, glancing upward, lodged under the skin over the sacrum. Although droopy on the fourth day, he made a gradual and complete recovery.

On July 23, 1892, I shot a bull calf five weeks old at Fort McHenry at a range of four feet. The weapon used in this instance was a 0·38-caliber double-action Colt's revolver. The bullet was infected by smearing a recent culture of anthrax upon the conical end. The ball entered the left thigh and lodged in the perinæum. The animal sickened on the third day and died July 30th. Cover-slip preparations stained with methylene-blue from the blood of the spleen, liver, and heart showed anthrax.

The experiments with fire-arms conducted so far give results with but two weapons—namely, a 0·22-caliber six-chambered revolver and the 0·38-caliber six-chambered double-action Colt's revolver. The bullet of the former weighs twenty-nine grains, while the charge of powder weighs three grains. The bullet of the 0·38-caliber Colt's revolver weighs one hundred and twenty-five grains. It is fired by sixteen grains of powder.

The amount of heat imparted to these projectiles by the act of firing and at the moment of impact must be inconsiderable when compared with that imparted to the 0·45-caliber projectile of lead belonging to our service rifle, as well as that of the rifles of small caliber forming the armament of the foot troops of France and Germany. The last guns mentioned (the Lebel and Mauser) may be taken as types of the portable guns with which the wars of the future are to be fought. The projectiles fired from them have a leaden nucleus with an outer covering of steel or copper.

On September 2, 1892, the fate of anthrax spores on the projectile of the 0·45-caliber Springfield rifle was tested as follows:

The full charge of powder—seventy grains—was used at a range of ten feet. Three bullets were infected in grooves made by the pressure of a knife blade upon the conical end of the lead. The bullets were fired into a target of pine boards, each board being an inch thick, disposed at intervals of an inch.

The first bullet penetrated eighteen, the second seventeen, and the third nineteen boards. Each bullet was recovered with a pair of sterilized forceps and placed in a test tube of bouillon.

Repeated examinations of these tubes after the lapse of forty-eight hours failed to show the presence of anthrax. The shallow grooves in which the anthrax was smeared were invariably effaced, while the bullets were very much "set up" by the resistance encountered in the target.

Three more bullets were infected on the same day and fired into the same target.

In this experiment the bullets were infected in the concavity next to the powder. The penetration of the projectiles was nineteen, twenty-three, and eighteen inches, respectively. Each bullet was recovered with a pair of sterilized forceps and dropped in a tube of bouillon.

Examination of the medium after the lapse of forty-eight hours demonstrated the presence of anthrax in two of the tubes.

Although I had neither of the above-named rifles of small caliber with which to continue my experiments, I was fortunate enough to secure the use of a modified Springfield rifle, which has virtually the same ballistic properties as those of the Lebel or Mauser.

The modified Springfield shoots a ·30-caliber bullet, weighing two hundred and thirty-one grains, made of a leaden nucleus covered by a mantle of either German silver or copper. It is impressed by thirty-six grains of smokeless (Wetteren) powder. Its initial velocity is about two thousand one hundred feet per second.

On August 30, 1892, four full-grown white rabbits were shot at Frankford Arsenal with a modified Springfield as follows:

Rabbit No. 1 was shot at a range of ten feet with a copper-covered bullet infected with anthrax spores at the conical end. The bullet passed through both ears and the intervening scalp. The bullet then penetrated a target of pine boards an inch thick, placed an inch apart. It was recovered in the thirty-fifth board, having penetrated thirty-four inches of pine.

The bullet was secured with sterilized forceps and dropped into a test tube of bouillon.

The rabbit died from shock, the missile having grazed the skull, two hours after the shooting.

Twelve cover slips and two agar-agar slants, prepared from the blood in the track of the bullet twenty-four hours after death, failed to show the presence of anthrax; and no anthrax was ever found in the tube of bouillon containing the bullet.

Rabbit No. 2, like the preceding, was shot with a copper-covered bullet infected with anthrax spores at the conical end. Range, ten feet.

The bullet passed through both ears, about an inch from the skull, and was recovered between the twenty-eighth and twenty-ninth pine boards with sterilized forceps and placed in bouillon. The bullet was deformed at the conical end—set up—having very likely struck a pine knot in one of the boards.

The rabbit died on September 3, 1892.

Careful search for anthrax failed to demonstrate the presence of the micro-organism in either the blood or tissues, nor did it develop in the bouillon containing the bullet.

Rabbit No. 3 was shot at a range of ten feet with a leaden bullet covered with German silver. The bullet passed through the right ear two inches from the scalp. It was recovered from the twenty-first board and with sterilized forceps placed in bouillon.

Cover-slip preparations from the blood of all the organs, stained with a solution of gentian-violet, demonstrated anthrax in abundance. The anthrax was also found in the tissue of the kidney, liver, and heart, by Gram's method.

The bouillon containing the bullet never developed anthrax.

Rabbit No. 4 was shot at a range of ten feet with a leaden bullet covered with German silver. The bullet passed through both ears near the scalp, and penetrated forty-three inches of pine. It was placed in bouillon with sterilized forceps.

The animal died on September 2, 1892.

Anthrax was found in the blood of the heart, and Gram's method revealed its presence in the tissue of the liver, heart, and kidneys.

From the foregoing it appears that only the two rabbits shot with the bullets covered with German silver died of anthrax.

The presence of anthrax could scarcely be expected in the first rabbit shot with a copper bullet, for the reason, as stated, that death was caused by shock only two hours after the injury.

Although the result was negative in the second rabbit shot with a copper bullet, I am very much inclined to believe that further experiments with this projectile would show it to be as capable of transmitting anthrax as the projectile covered with German silver.

It should be noted that anthrax developed in none of the tubes in which the projectiles were dropped when recovered from the target of pine boards. This is doubtless attributable to the great friction and heat developed by the resistance offered in the wood.

I wish to state in this connection that two copper-covered projectiles were infected with anthrax in the concavity next to the powder and fired into the target of pine boards after the rabbits had been shot. The projectiles were placed in bouillon with sterilized forceps. A number of examinations, after the expiration of forty-eight hours, failed to confirm the presence of anthrax.

To prove that pyæmia, erysipelas, etc., could be communicated to gunshot wounds by projectiles infected with their particular micro-organism, it would be necessary to repeat the experiments with anthrax, using instead the germ required to bring about the effects desired.

Many difficulties present themselves when we contemplate such a scheme. If we had animals as susceptible to the *Staphylococcus pyogenes aureus* and the streptococcus of erysipelas as rabbits are to anthrax, the problem would be easy enough to solve, but such is not the case. The same thing might be said of the other pyogenic bacteria.

The following conclusions may be formulated from the foregoing:

1. The vast majority of cartridges in original packages are sterile and free from septic germs.

2. The sterile condition of the cartridges is due to the thorough disinfection and absolute cleanliness observed in the process of manufacture.

The disinfection with heat, acids, and alkalies, and the rigid rules of cleanliness used in the process of manufacture, are employed to exclude grease and dirt, as the latter impair the keeping qualities of the powder and disturb ballistic values.

3. The majority of gunshot wounds are aseptic, because the vast majority of the projectiles inflicting them are either sterile or free from septic germs.

4. Cartridges out of original packages show micro-organisms upon them, and these are not entirely, if at all, destroyed by the act of firing.

5. Anthrax, when applied to the projectile of a portable weapon, is seldom if ever entirely destroyed by the act of firing.

6. When a gunshot wound is inflicted upon a susceptible animal by a projectile infected with anthrax, the animal becomes infected with anthrax and dies in the vast majority of instances from said infection.

7. The heat developed by the act of firing is not sufficient to destroy all the organic matter on a projectile, the cherished notion of three centuries and more to the contrary notwithstanding.

8. The results, as set forth in the foregoing paper, justify the assumption that a septic bullet *can* infect a gunshot wound.

I desire to express my sincere thanks to Professor William H. Welch, of the Johns Hopkins Hospital, for the invaluable assistance rendered me while conducting my experiments.

To Dr. W. T. Councilman, professor of pathology of Harvard College, I beg to acknowledge my sincere indebtedness for valuable hints upon the subject of firing, the method of recovering projectiles, etc.

Fort McHenry, Md., *September 11, 1892.*

CARCINOMA OF THE SIGMOID FLEXURE. INTUSSUSCEPTION, AND INTESTINAL OBSTRUCTION;

OPERATION, REDUCTION OF THE INTUSSUSCEPTION AND RESECTION OF INTESTINE;

*RECOVERY.**

By FRANK HARTLEY, M. D.

J. S., domestic, aged thirty-two years, Norway, single. Admitted to the New York Cancer Hospital March 27, 1892.

Condition.—Anæmic, emaciated. Her previous health has been good. Menstruation regular. Her family history is not known to her. Her present trouble began with diarrhœa on March 1, 1892, at which time and subsequently to it she lost a considerable quantity of blood. She has had severe attacks of pain in the abdomen up to the present time, with an absolute constipation during the last week.

March 27th.—Examination without ether revealed a large tumor within the rectum, easily movable and suggesting a carcinoma with intussusception.

28th.—Under ether the diagnosis was confirmed by bringing the tumor through the anus. It was found to be a large sloughy mass, hard at its base, completely surrounding the intestine, and with a lumen in its center admitting with difficulty the forefinger.

This was thoroughly disinfected with bichloride-of-mercury solution (1 to 1,000) and dusted with iodoform powder.

Iodoform gauze was then carefully packed around and into all crevices in the tumor. The mass was then reduced within the anus.

30th.—Operation.—Trendelenburg's posture. Median incision eight inches in length. Small intestine removed to the abdomen from the pelvis. The tumor was found to be within the rectum and surrounded by a double invagination or intussusception. The outer or second intussusception was reduced with slight difficulty. This, however, did not allow the tumor to be brought into the abdomen proper. With a partial reduction of the first intussusception, however, it could be brought above the iliac fossa.

Considering the condition of affairs—a tumor within the gut with an intussusception—the natural method of operation seemed to be that recommended by Mounsell, of Melbourne, Australia, for in this way the sloughy mass could be reached, cut loose, and delivered without any possible contamination of the peritoneal cavity. Consequently a long incision three inches in length was made over the lower segment entering the intestine; intussuscipiens, the tumor, and intussusceptum were delivered through this opening after protecting the mass with additional gauze.

The intussusceptum was then divided transversely a little below its neck. The divided ends were held in position until the arteries in the mesenteric border were securely ligated. Silk sutures were then passed through all coats of the intestine as they were held in position according to Mounsell's recommendation and tied.

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* Read before the New York Surgical Society.

One or two catgut ligatures were placed in the mucous membrane alone where it gaped. The fold was then reduced and a Lembert suture was carried around the intestine above the larger and deeper sutures. After this the longitudinal incision in the lower segment was sutured by a few stitches of silk in the mucous membrane and a Lembert suture in the serosa and submucosa. The cavity was wiped out with a sponge. The abdominal incision was closed with silkworm gut. Rubber tissue applied over the line of incision and a bichloride dressing applied. After operation the course was uneventful, temperature having never arisen above 100° or the pulse above 96.

April 7th.—Primary union in the abdominal wound.

8th.—Semi-fluid movement following an enema.

11th.—Small movement.

12th.—Large number of scybala removed. Daily removal of these until the 14th of April.

May 1st.—Has had daily voluntary movements. Sat up.

7th.—Up and about the ward.

This case is of interest because of the happy recovery after enterectomy for carcinoma of the intestine combined with a double invagination, as well as being the first case of this kind performed here. To me it seems to be the method for enterectomy, especially in such cases as the above. The rapidity with which it can be done and the easy command one has over the hæmorrhage seem to be the two great points in its favor.

7 West Thirty-first Street.

WHAT IS THE TRUTH ABOUT TUBERCULIN?

By JOSEPH WILLIAM STICKLER, M. S., M. D.,

ORANGE, N. J.

In the *Medical Record* for August 1, 1891, I gave fourteen reasons why tuberculin was a failure, and I spoke largely from my own experience, both in this country and in Berlin. Dr. Karl von Ruck, of Asheville, N. C., made an assault upon my assertions in an article which appeared in the *Virginia Medical Monthly* for September, 1891. He says: "Certainly there is a serious discrepancy in Dr. Stickler's conclusions, as compared with many accurately reported series of cases and results, while much may depend upon individual judgment and use of a remedy and the class of patients treated, as to the outcome of the treatment; yet, in view of his assertions, there must be terrible blunders somewhere, either with Dr. Stickler or with many others who have come to exactly opposite conclusions." If it is true that many still persist in the use of tuberculin and really believe in its efficacy, there are also some eminent men who do not still use this agent or believe in it. I accuse no one of having made blunders while using tuberculin, for I believe all investigators followed conscientiously and faithfully the directions of Dr. Koch and those who demonstrated the use of the "remedy," and I also believe every man who used it wished to prove its efficacy. When, in the history of the world, were physicians more desirous of demonstrating the value of a remedy than when Dr. Koch placed in their hands an agent which was at first supposed to be a specific for tuberculosis? Keeping in mind the spirit and purpose of these investigators, shall we expect to hear from them adverse reports, if they can honestly render favorable ones? Now, then, what do the prominent men say to-day in relation to tuberculin? The excitement occasioned by the introduction of the new method of treatment has subsided, patients treated have been carefully watched, cases have been multiplied, large and small doses have been used, and what is the verdict? Let me, in answering this question, quote the statements of two prominent and able men who were kind enough to express their views to me.

Dr. A. Jacobi, of New York, says, in a letter addressed to me:

> Dear Doctor: I have not used any tuberculin since I published my paper in February or March. In so doing I took leave of the remedy, if remedy it be. My belief in it has become even less than I expressed at that time.
>
> Very truly yours, A. Jacobi.

From Berlin, the place where tuberculin has been fairly and exhaustively considered and tested, comes the following letter:

> Most Honored Sir: I have become convinced, unfortunately, that tuberculin is of no use, and I therefore use it neither in small nor large doses. I am sorry that Professor Koch's discovery this time has been such a failure; but it is better to openly admit this than longer to flatter one's self with fallacy.
>
> With fraternal greeting, devotedly,
>
> Von Bergmann.

Now, it seems to me such statements mean something. I think they strengthen the opinions I advanced in the article criticised by Dr. von Ruck.

The first statement I made about tuberculin was, that it does not cure tuberculosis in its primary or advanced stages. I still think I was correct in making that assertion. My second assertion was "that if administered during the primary stage, it is apt to hasten the progress of the disease." Dr. von Ruck says: "Do the results reported by other observers in this country, from the first paper published by Dr. Jacobi to the last published by Dr. Dennison, justify this assertion?" He then intimates that I may have intended to say "progress toward recovery." I meant just what I said. It should not be forgotten that Dr. von Ruck has a sanitarium in North Carolina, and a most excellent place it is. Patients who go there can scarcely help gaining in health, and my own belief is that many of his reported "successes" have been due to the climate of North Carolina and the excellent care he has bestowed upon his patients. In presenting this article to the readers of the *Journal*, it is my purpose to defend the statements I made about tuberculin, because I believe we should express as freely our disapproval of a remedy if it be proved to be pernicious in its effect upon the human system, as our approval of it if it be shown conclusively to be effective in curing or modifying disease.

The Death of Dr. J. Culver Davis, professor of surgery in the medical department of the University of Denver, took place at Zurich, Switzerland, on October 8th. He was an ex-president of the Colorado State Medical Society and a graduate from the Castleton Medical College. He was well known in the East as well as in the West for his surgical and neurological ability. He resided in New York until 1879.

HYSTERICAL APHONIA,

WITH ESPECIAL REFERENCE TO A PLAN OF TREATMENT, AND A REPORT OF CASES.

BY JAMES A. BACH, M. D.,
MILWAUKEE, WIS.

APHONIA, or loss of voice, can be produced in a number of different ways. There may simply be a mechanical obstruction in the coaptation of the vocal cords, or it may be due to ulcerative or other destructive or obstructive processes of the cords and larynx. On the other hand, there may be a direct or indirect interference in the function of the nerves supplying the muscle of the larynx; this may be peripheral or central. Any of the forms of paralysis to which the larynx is subject may become the causative factor. By far the most frequent of any of the causes referred to is the paralysis, or more properly paresis, of hysteria.

There are but very few physicians who have not seen a case of this kind in their experience, whether recognized or not. The history of these patients is generally a peculiar one, and, under ordinary circumstances, assists much in drawing our attention to this functional defect known as hysteria.

This class of patients are largely of a melancholic and stubborn disposition, and often try the physician's patience.

It has been my good fortune to have seen an unusual number of such cases, and having had a more than ordinary success in their therapeutics, I wish to outline a plan of treatment especially for this form of aphonia, leaving other forms for a later consideration.

The ætiology of hysterical aphonia is similar to that of other hysterical conditions. It is less a local than a general trouble manifesting itself locally. The history of the cases, as well as the conditions present, will readily distinguish it from any of the forms of aphasia. In many cases no cause is apparent and the voice may disappear either suddenly or gradually. The affection seems limited to the period between puberty and the menopause. Examination with the laryngeal mirror shows the cords to be nearly of a normal color. If a strong effort at intonation is made by the patient, the vocal cords quickly approximate but as quickly recede, so that voice is not produced, although, apparently, the effort of the patient is continued. The lack of a proper central stimulation is well illustrated here. The central nerve stimulus is lost, and the muscles of phonation are practically paralyzed. This condition is often accompanied with paresis of the tongue and pharynx.

Partial or complete anæsthesia of the larynx is also generally present. It is well established that the impediment to nerve conduction is not situated in the peripheral motor nerves, for the electrical reaction remains normal. It would further seem, from results of the treatment I propose to show, that there is no impediment at all to conduction, but only a lack of the production and correct application of a central stimulus. That there is a willful element on the part of the patient in this condition there is no doubt in my mind, although this may amount to only a tendency. One sees this well illustrated in the severer forms of aphonia where patients have apparently lost their power of whispering as well, even though the tongue retain its motion. Whispering not being a function of the vocal cords, but only the modifying influences upon the breath by organs above the larynx, there is no good reason for such complication unless those organs be paralyzed, which generally is not the case. Any of these patients are easily convinced of this fact, however, and confidence is gained.

Treatment.—Most of the patients, even without any special treatment, get well sooner or later, varying from a few months to ten years and over, as the case may be. During the mean time, however, they are not only a nuisance to others but a burden to themselves. The various modes of treatment practiced and advocated have met with success in probably the majority of cases, but the results have often been only temporary or incomplete. This has been the result with the various methods of electrical treatment, whether centrally or locally directed; also with the administration of the different nerve tonics and sedatives as well as with other medical means.

Furthermore, the time consumed in securing definite results has, in many cases, been considerable. It is true that immediate success has been obtained in some cases by sudden and strong mental impression—as, for instance, the use of the cautery down the spinal column, and several other harsh procedures; but the treatment to which I would draw attention proposes to do away with all such means, and teaches the patient inductively to regain control of the larynx, to innervate properly the muscles of the vocal cords and produce voice, and thus placing it upon a scientific basis.

Where the inability of whispering is apparent it takes some preliminary steps before attempting to produce vocalization. This can be overcome by directing the patient to inhale deeply and blow out again with a puckered mouth, and after this to blow with the tongue pressed against the upper teeth, producing the sound of S. A few minutes' practice in this will enable one to have the patient blow any of the letters, holding the tongue and upper part of the throat in proper position.

Should the patient try to evade the production of whispered sound in this manner by holding his breath, a sudden pressure upon the chest of the patient by the physician, sufficiently hard to expel the air, will at once get him over this fault, and he will thus in a few moments again be able to whisper. The moral effect produced by this procedure is of assistance. We are now ready to go on to vocalization.

The greatest difficulty with the hysterical patient is the production of the first tone, as such patients are generally unable, through their own efforts, to produce any sound whatsoever. This initial difficulty, however, can always be overcome in a few moments by the assistance of reflex action. For this purpose a mild irritant, whether mechanical or chemical, may be applied to the larynx so as to excite cough. When, however, the interlaryngeal anæsthesia is great, it may become necessary to inject some non-irritating fluid—for instance, warm water—into the larynx, which, running into the trachea, will produce cough readily. This, of course, requires no effort on the part of the patient. Having excited this cough once or twice, the patient will be able to reproduce it independent of the irritant. The cough is short and of an explosive character. In connection with this cough it is well to have the patient close his mouth and produce a rasping movement in the throat, as though trying to free it from mucus, while the physician supports the larynx with his hand, exerting some pressure laterally.

After repeating the cough five or six times the patient will have gained sufficient control of central stimulation to produce a cough. It now becomes a simple matter to continue this cough and to pronounce, more or less distinctly, the vowel "a" at each effort, and after a few efforts to substitute the vowel "e," and so on until all the vowels have been coughed. After this is repeated several times, the element of cough can easily be eliminated from the vocalization when we have left the pure vowel sound, which, without effort on the part of the patient, can be combined with consonants, as, for instance with "d"—"ad," "ed," "id," "od," "ud," first placing the vowel before the consonant and then reversing this. It would not be advisable to attempt the articulation of words at this stage, but better combine the vowels with single consonants, gradually increasing the duration of the sound. The patient is thus led to speak words without the power of resistance, either willful or otherwise. The time occupied in this procedure need not be more than half an hour, although it is advisable to give several treatments, in order to place the patient beyond the possibility of relapse by impressing him with the fact that he produced the sound by his own efforts, and that it is due to a lack of effort if the voice is lost again. Show him how, by coughing if necessary, he can go through the same process as before.

A report of the following cases will illustrate results obtained in apparently unfavorable subjects:

Case I.—Miss B., aged twenty-eight years, poorly nourished, anæmic, and of a neurotic type, came under my care for treatment in June, 1889. For about seven years she had been unable to speak or whisper, and she carried with her a tablet upon which all communications were written. She was very despondent and had but little hope of relief, as she had nearly continuous treatment of various kinds for more than three years.

Upon examining the larynx, I found a very characteristic picture of hysterical paralysis of the vocal cords, and, in addition, an infiltration of the ventricular bands, yet not sufficient to prevent the proper action of the cords. Although the paralysis had existed so long, the resulting atrophy was not very marked. One peculiarity of the case was her imagined inability to whisper. As her breathing power was fair, there was no good reason for this complication. The patient was of a fairly intelligent class, and I explained to her the condition as well as I could, assuring her that with her co-operation it would be perfectly possible to effect a cure in a short time. After having shown her the folly of not being able to whisper, and that whispering is not a function of the vocal cords or larynx and is produced by the modifying influences upon the breath by organs above the larynx, she gained confidence, and I had at least a whisper to begin with. It now remained again to direct properly central innervation of the vocal muscles, which, according to the plan proposed, was accomplished as readily and in as short a time as if she had been aphonic for only a week. The other pathological conditions of the larynx were treated for some time before the patient was discharged.

Case II.—Mrs. J. H., aged forty-three years, married. This lady was well nourished and in perfect general health, but for about ten weeks had been unable to speak, for which difficulty she had been treated without result. The laryngeal picture was one of hysterical aphonia with considerable congestion; no other changes were found. Patient asserted that she had contracted the trouble through a severe cold, but I elicited the additional fact that a quarrel in the family, about the time of contracting the cold, played a rather more important factor than the cold itself.

Treatment was applied as in the preceding case, and at the second visit the patient was discharged, perfectly cured.

Case III.—Miss W. B., a teacher, aged thirty years, well nourished and of a neurotic type, had, seven months previously, lost her voice. In consequence of this she was obliged to give up her occupation as teacher. During this time she had been under various modes of treatment by different physicians. One doctor told her that her throat and larynx were "swollen shut." Here again the laryngeal image was characteristic. The condition was uncomplicated, and my prognosis was favorable. The treatment resulted in a cure in fifteen minutes, although she made a second visit before I discharged her.

Case IV.—Miss H., Ohskosh, Wis., was referred to me with an aphonia of ten weeks' standing. Patient was a teacher and had been an earnest worker. She was poorly nourished and rather enfeebled in general health. She was able to speak clearly and in a loud voice after the second treatment.

Case V.—A sister from the convent applied for treatment for aphonia as well as the inability to whisper. She had previously received treatment by electricity, according to her statement, and after a few days of such treatment a tracheotomy had to be performed on her because breathing became difficult. Why this was found necessary by the attending physician I was not exactly able to find out; however this may be, she made a good recovery of her tracheotomy. When I saw her first, about a week ago and four weeks after her tracheotomy, she was unable to whisper and was rather despondent, making it an exceedingly difficult case. However, at the fourth visit following the proposed plan of treatment I was rewarded with having her speak, and discharged her the following day fully cured and having a strong and sonorous voice which enabled her that day to lead the regular prayer meeting.

The results in these and a number of other cases were so uniformly satisfactory and so direct that all other means of treatment would seem superfluous.

It has occurred to me that, could other hysterical conditions be brought under such direct control and treated upon a similar plan, we would not so frequently hear of Christian science and faith-cures after so-called medical science has failed.

Corner of Mason Street and Broadway.

Dr. Hare's Chloroform Investigation.—Dr. Hobart A. Hare, of Philadelphia, writes to us, that, having been asked to undertake a research at the expense of the Government of His Highness, the Nyzam of Hyderabad, India, with the object of reconciling, if possible, the conflicting views concerning the action of chloroform, he is anxious to receive from American physicians and surgeons records of any cases where it was noticed that the heart stopped beating *before* respiration, or respiration stopped *before* the heart. Notes concerning any such cases will be considered strictly confidential, provided the reporter states his desire that his name shall not be mentioned in the report of the research when it is finished. Otherwise due credit will be given for any information received.

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THE PRESENT ASPECT OF THE CHLOROFORM QUESTION.

THE report that the Nizam of Hyderabad has a third Chloroform Commission in view, and has invited Dr. Hobart A. Hare, of Philadelphia, to take charge of the same, as mentioned in a recent issue of this journal, will awaken additional interest in this perhaps hackneyed, yet vastly important question.

A review, or rather epitome, of the most important investigations and of the results of physiological experiments and clinical experiences in reference to the cause of death in cases of poisoning by chloroform inhalation during the last two years may be briefly expressed in the following conclusions: The most careful physiological experiments have shown that chloroform acts directly upon the heart. The depressing action that the anæsthetic exerts upon the circulation comes upon the heart and not upon the vaso-motor system. The reports of cases of chloroform poisoning are for the most part lamentably meager. Only about one tenth of them contain any information relative to the condition of the patient's pulse or heart's action at the time of the accident. The reports that are available must be divided into three groups: First, those of cases which resulted fatally in which mention is made both of the pulse and of the respiration, the statements being generally detailed and complete; second, those in which, while they are complete in a measure, there is no direct reference to the pulse or heart's action, yet in which an inference may be drawn from the subjective symptoms described; third, those in which mention is made both of the circulation (pulse) and of the respiration.

From over a hundred reports of cases of deaths from chloroform we have only been able to find fourteen that can be classed in the first group. In thirteen of these the pulse is said to have ceased some time before the cessation of respiration, and only in one case was there any evidence of primary respiratory paralysis, with cyanosis and asphyxia. The second group only includes six cases, and in five of them "an extreme pallor of the patient's face and an enlargement of the pupils" were noted before respiratory embarrassment occurred, thus allowing of the inference of a primary action of the drug upon the circulation. The third group consists of only two cases. Both ended in recovery, and in both the pulse ceased some time before the respiration. In fatal cases the quantity of chloroform used varied from a fluidrachm to four or five fluidrachms. The admixture of air with the fumes of chloroform during the administration of the anæsthetic exerts, apparently, no beneficial influence, but, on the contrary, seems to enhance the danger of the drug. The fatal issue occurs as frequently at the outset of the administration and before anæsthesia is complete as during or even after the establishment of anæsthesia.

Regarding the most valuable means for resuscitation in cases of suspended animation from chloroform inhalation, artificial respiration seems to be of positive value only in cases of asphyxia; when the pulse has disappeared it seems of very little use unless coupled with measures that artificially continue the heart's action, such as Maas's method of rapid and forcible pressure below the heart and others.

Thus, very briefly, we have sketched the present status of the chloroform question, as set forth in over two hundred reports, addresses, and monographs published during the past two years in medical journals both here and abroad.

MEDICAL ATTENDANTS TRAVELING WITH INSANE PATIENTS.

MANY of the specialists in psychiatry in this country have adopted the plan of sending certain insane patients away to travel with a medical attendant and a person who is both nurse and valet. In instances in which the patient's circumstances are such that the large expense entailed by this plan of treatment can be afforded, the immense advantage that it possesses over asylum treatment becomes apparent at once. Usually the greatest obstacle to the execution of such a plan is the difficulty of securing a physician who is sufficiently experienced, especially in treating the insane, who is possessed besides of the address and tact required to create an impression on the patient in daily intercourse, and who is willing to travel with such a patient even for the apparently liberal compensation that is paid.

That physicians who travel in this way should be provided with every means of establishing their identity and the relations they hold toward their traveling companions, was shown by a cable dispatch to the daily press during the past week. In this case an insane patient traveling with his uncle, a physician of this city, and with a nurse, had all three of them arrested in a little Norwegian town on the ground of maltreatment. The persons arrested explained the circumstances of the case, but the court held the uncle and the physician in bonds of 10,000 kronen (about $2,700) each, because the explanations were regarded as unsatisfactory. By means of telegraphic dispatches the matter was eventually settled, though it must have been a distressing ordeal for the family to be subjected to such notoriety, and it was certainly an unpleasant experience for the physician. A personal acquaintance with him makes us believe that he was not to blame; in fact, the uncle assumed the responsibility for the chastisement which was the maltreatment complained of.

We would advise that a physician so traveling should provide himself not only with his government passport that certifies he is a physician and an expert in lunacy, but with his credentials as an examiner in lunacy from a State board and with an attested document from the relatives of the patient to the effect that the latter is under the authority of the physician. One more comment, the value of which is at once apparent—omit all relatives as associates in the case.

MINOR PARAGRAPHS.

INVESTIGATION CONCERNING EUCALYPTUS OIL.

Helbing's *Pharmacological Record* for June treats of the various kinds of oil of eucalyptus in the London market. The subject is reported on in such a manner as to show the percentages of eucalyptol in the specimens examined. The best sample showed 58 per cent.; the lowest showed *nil*. The best brand is known as Cumming's, and the lowest percentage found therein was 44. The poorest variety was a French product. A better grade, with 46 per cent. of eucalyptol, was marked Spanish. An Australian product contained 32 per cent., but an article called Californian had less than 2 per cent. This latter not only has a low medicinal value, but has a tendency to irritate the bronchial mucous membrane when inhaled. The purer article has a pungent flavor, but is devoid of irritating quality. The Spanish variety is not wholly free from obnoxious substances. Suggestions are made by Helbing as to the introduction of more rigid tests for eucalyptus oil in future manuals.

SYNTHETIC SALICYLIC ACID.

The *Pharmacological Record* of Helbing and Passmore publishes the results of an investigation as to the purity of the salicylic acid and its derivatives made by Dr. Henry Byk, of Berlin. This manufacturer has been enabled to produce the acid and the sodium salt as commercial articles in crystals that are exceptionally beautiful and characteristic, and even the products called by him "powders" present a distinctly crystalline appearance. The conclusions of this inquiry are that a synthetical salicylic acid can be produced that is perfectly pure and identical in chemical composition with the best specimens of the acid prepared from oil of wintergreen, and that Byk's "physiologically pure" acid is almost perfectly homogeneous and has not the slightest trace of other homologous acids. The powder-acid has about 0·1 of cresotic acids. The fractional precipitation of the silver salt of salicylic acid gives the best laboratory results in separating the acid from its isomers and homologues.

DERMATOL IN SURGERY.

Dr. A. K. Stone has published in the *Boston Medical and Surgical Journal* for September 1st the results of a bacteriological and clinical investigation of dermatol. He concludes that subgallate of bismuth, called dermatol from its alleged usefulness in skin diseases, is a valuable addition to the surgeon's armamentarium. Laboratory experiments show that it repels water, thus depriving many bacteria of their source of food, and that it has active powers in hindering bacterial growth, although it does not kill bacteria. The hindrance to the growth of the bacteria is probably due to the chemical combination of dermatol with the ptomaines produced by their growth, forming compounds that are hostile to their rapid development.

JENNER'S CENTENARY IN JAPAN.

The medical profession of Japan, impressed with the blessing to their countrymen conferred by vaccination, will erect at Tokio a statue to "that medical benefactor of mankind, Dr. Jenner." This statue will be ordered and set up somewhat in advance of the Jennerian centennial year, but there will be an appropriate rededication of it in 1898, in harmony with the celebrations in England and in America.

WOMEN AND THE BRITISH MEDICAL ASSOCIATION.

At a meeting of the association held in London on August 24th, the long-standing restriction against female practitioners becoming members of that body were abrogated. An article excluding them from membership was carried at the Bath meeting, in 1878, by a considerable majority. The *Medical Press and Circular* remarks that "public and professional opinion has undergone a very great change and the emancipation of women has made gigantic strides," so that the opening of the doors again by a large majority vote was a result that was expected by nearly every element in the British profession.

ITEMS, ETC.

Harvard University.—The government of the university is desirous of obtaining information concerning the following persons who were graduated at the medical school in the years named—the address, if living, or the date and place of death, if dead:

1826. Giles M. Stone.
1831. Hermon Chandler.
1835. John H. Gushee.
1836. Alfred Day.
1836. William D. Peck.
1838. Morrison Oakes.
1839. Bertrand F. Bugard.
1842. Lucius L. Scammell.
1843. Charles M. Dickenson.
1843. Alexander Jackson.
1844. Albert A. Hassard.
1845. Peleg F. Hopkins.
1845. Stephen Remington.
1846. Thomas J. W. Kennedy.
1846. Elie Lacerte.
1846. Henry Wigand.
1847. John Favill.
1847. Henry P. Pratt.
1848. Stephen F. Elliot.
1849. John H. Blake.
1849. Octave Fauvelle.
1849. George F. Jenks.
1849. Edward Kirby.
1850. Charles N. Germaine.
1850. Edwin Leigh.
1851. William A. N. Archibald.
1851. A. D. W. Martin.
1852. Charles Kidder.
1852. T. Fletcher Oakes.
1852. John Whipple.
1853. Elisha Barber.
1853. Graham Marr.
1853. Joaquim A. A. Ribeiro.
1854. George J. Donnelly.
1854. Michael W. Turner.
1855. Albert C. Folsom.
1855. Henry Rockwood.
1856. Hugh Cavin.
1856. Francis J. Parker.
1856. John Spring.
1857. John D. Taylor.
1857. Anton W. Tjader.
1858. John H. Kinsman.
1859. Eugene De Courcillon.
1860. Samuel M. B. Rouse.
1860. Thaddeus Scott.
1860. John W. Walden.
1861. Frank E. Dow.
1861. Theodore S. Floyd.
1861. William E. Hayden.
1861. Joseph C. Skinner.
1862. Smith A. Jenkins.
1863. Alex. S. Mackenzie.
1863. Daniel McPhee.
1864. Timothy Cahill.
1864. Allan H. Miller.
1865. William B. Buckley.
1865. Somervill Dickey.
1865. Charles H. Page.
1866. Joseph L. Bunting.
1866. Thomas R. Fullerton.
1866. Sylvanus Heath.
1866. George Munroe.
1866. Charles K. Packard.
1866. Roger E. Perkins.
1867. Thomas C. Leaver.
1867. Kitson Casey.
1867. Alex. Fleming.
1867. Thomas B. Holmes.
1868. Orson A. Boothby.
1868. Charles E. Caldwell.
1868. Herbert Elliott.
1868. Joseph H. Fellows.
1868. Charles Q. Goodwin.
1868. James W. Harris.
1868. Thomas Maher.
1869. Alfred W. Baylies.
1869. Donald Chisholm.
1869. William H. Hills.
1869. Edwin C. Howard.
1869. William H. Logan.
1869. James L. Simpson.
1870. Herbert Boyd.
1870. Miles B. Jones.
1870. John H. Simpson.
1870. Herbert Smith.
1871. George S. Bartlett.
1871. James W. Fraser.
1871. Charles A. Holt.
1871. James H. McDonnell.
1871. Whitfield Winsey.
1872. Charles D. Bradley.
1873. James J. McDonald.
1876. Frederick P. Biggs.
1876. John H. Kenneally.
1876. Alex. Livingston.
1877. John C. Geary.

Address Dr. Francis H. Brown, No. 4 Exchange Place, Boston.

The Steamship Companies and the New York Quarantine.—The following preambles and resolution were passed at a recent meeting of the Transatlantic Steamship Association:

Whereas, Dr. William T. Jenkins, health officer of the port of New York, and his staff, have, in our opinion, by their energy and devotion to duty averted an epidemic of Asiatic cholera that threatened not alone this port and city of New York, but also the entire country, and

Whereas, We consider the work of quarantine was and is conducted with a view to the least possible interference with business interests and travel so as not to inconsistently obstruct or injure commerce, and

Whereas, We consider the different shipping interests of this port have been treated with impartial fairness, and

Whereas, The Hon. Charles Foster, Secretary of the Treasury, and the officers of the National Government acting under his direction, aided in this noble work; be it therefore

Resolved, That the hearty commendation of this association be and is hereby given to Dr. William T. Jenkins and his staff and to the Hon. Charles Foster, Secretary of the Treasury.

The New York Academy of Medicine.—At the next meeting of the Section in Obstetrics and Gynæcology, on Thursday evening, the 27th inst., papers are to be read as follows: Reprehensible, Unnecessary, and Necessary Antiseptic Midwifery, by Dr. Henry J. Garrigues; and Movable Kidney, with a Report of Ten Cases treated by Nephrorrhaphy, by Dr. George M. Edebohls.

At the next meeting of the Section in Hygiene, etc., on Friday evening, the 28th inst., Dr. Bernard Gordon will read a paper on The Present Condition of our Pharmacies, with Suggestions for Improvement, and Dr. S. T. Armstrong will present a paper entitled Do the Vital Statistics of New York City demonstrate the Efficiency of the Board of Health?

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from October 9 to October 15, 1892:*

Birmingham, Henry P., Captain and Assistant Surgeon, is granted leave of absence for one month.

Caldwell, Daniel G., Major and Surgeon, is granted leave of absence for fifteen days.

Maus, Louis M., Captain and Assistant Surgeon. By direction of the Acting Secretary of War, Par. 3, S. O. 199, August 24, 1892, is revoked, and he is relieved from duty at Fort Apache, Arizona Territory, and will report in person without delay to the commanding officer, Whipple Barracks, Arizona, for duty at that station.

Ware, Isaac P., First Lieutenant and Assistant Surgeon, is relieved from duty at Fort Logan, Colorado, and will proceed without delay to Fort Supply, Indian Territory, and report in person to the commanding officer of that post for duty.

Society Meetings for the Coming Week:

Monday, *October 24th:* Medical Society of the County of New York; Boston Society for Medical Improvement; Lawrence, Mass., Medical Club (private); Cambridge, Mass., Society for Medical Improvement; Baltimore Medical Association; South Pittsburgh, Pa., Medical Society.

Tuesday, *October 25th:* Tri-State Medical Society of Alabama, Georgia, and Tennessee (first day—Chattanooga); New York Academy of Medicine (Section in Laryngology and Rhinology): New York Dermatological Society; Buffalo Obstetrical Society; Medical Societies of the Counties of Putnam (quarterly), Queens (semi-annual—Garden City), and Rockland (semi-annual), N. Y.; Boston Society of Medical Sciences (private).

Wednesday, *October 26th:* Tri-State Medical Society of Alabama, Georgia, and Tennessee (second day); New York Surgical Society; New York Pathological Society; Metropolitan Medical Society (private); American Microscopical Society of the City of New York; Auburn, N. Y., Medical Association; Medical Society of the County of Albany; Berkshire, Mass., District Medical Society (Pittsfield); Middlesex, Mass., North District Medical Society (Lowell); Philadelphia County Medical Society; Gloucester (quarterly), N. J., County Medical Society.

Thursday, *October 27th:* Tri-State Medical Society of Alabama, Georgia, and Tennessee (third day); New York Academy of Medicine (Section in Obstetrics and Gynæcology); New York Orthopædic Society; Brooklyn Pathological Society; Roxbury, Mass., Society for Medical Improvement (private); Massachusetts Medical Benevolent Society (annual).

Friday, *October 28th:* Yorkville Medical Association (private); New York Society of German Physicians; New York Clinical Society (private); Philadelphia Clinical Society; Philadelphia Laryngological Society.

Proceedings of Societies.

AMERICAN GYNÆCOLOGICAL SOCIETY.

Seventeenth Annual Meeting, held in Brooklyn on Tuesday, Wednesday, and Thursday, September 20, 21, and 22, 1892.

The President, Dr. John Byrne, of Brooklyn, in the Chair.

Periodical Intermenstrual Pain.—Dr. Chauncey D. Palmer, of Cincinnati, read a paper on this subject. The symptoms of such a condition were principally attacks of pain coming on generally about the middle of the intermenstrual period and most severe in the region of the ovaries. Sometimes the pain might be confined to one ovary, or both might be involved in the paroxysm. The attacks were irregular in severity and duration, usually intermittent, occurring at night or through the day. Their duration might be from two to nine days. They were not influenced by bodily exertion and they were not attended by febrile phenomena. As to the cause of such ovarian pain, neuralgia had been suggested as a probable factor, but, if this was the case, why was it, the author asked, that pain did not occur during the regular menstrual period, as it was at that time that women were especially susceptible to pelvic pains? The periodicity of the pain had first led to a suspicion of malarial poisoning in these cases, but this theory was soon abandoned when it was found that the attacks were not at all influenced by the most potent antiperiodics. The author was inclined to think that there was a structural change in the ovary to account for the pain, although the form, size, or even density of the organ might not be so altered as to make the change discoverable before removal. The condition might be an oophoritis, a peri-oophoritis, an interstitial oophoritis, or a follicular oophoritis, or several of the tissues might be involved in the degenerative process. There was likely to be hardening of the organ which interfered with the rupture of the follicle; this might be one cause of pain. There was no reason why the pain might not occur before the menstrual flow, on account of the increased vascularity of the ovary at such a time. The severity of the pain might be out of proportion to the pathological change and nerve pressure. When the congestion subsided the pain was usually relieved. Various measures had been resorted to for giving relief, some of which had been more or less effective temporarily. In some cases, however, the suffering would be of such character, and the life of the woman be made so miserable, that the question would be forced on the gynæcologist whether it would not be the proper thing to remove the ovaries in such a case, even though to the touch they might seem normal.

Dr. W. H. Baker, of Boston, was satisfied that this intermenstrual pain was ovarian in character. In some very persistent and prolonged cases, other means failing, he had found, at laparotomy, a cord-like condition of the tube, indicating an old interstitial disease of that organ. In some cases he had found the commencement of the menstrual flow give relief to a previously existing pain. Acting on this suggestion, he had frequently applied leeches to the uterus, when pain came on perhaps ten days after menstruation, with considerable relief from the attacks. Undoubtedly there were cases of this nature which called for removal of the ovaries.

Dr. Joseph Taber Johnson, of Washington, was not sure but that the great outcry against removal of the ovaries and tubes, except for conditions which could be very readily made out by touch, had caused the pendulum to swing somewhat too far the other way. He was convinced that there were certain ovarian conditions which could not be made out by touch, yet which caused severe pain and required laparotomy. In only one instance had he operated, doing total extirpation of the appendages for relief of such pain, and in that case the relief had been immediate.

Dr. H. C. Coe, of New York, said that the subject of pelvic pain was one that was constantly before gynæcologists. It was the one thing that brought the patient to the physician. Usually there was a great deal of difficulty in localizing the pain and in determining whether it was due to ovarian, tubal, or uterine trouble or to general depression of the nervous system. Where the pain was a complex one, the speaker did not believe it was possible to say it was due purely to intra-ovarian trouble, because in many such instances the tubes were found already enlarged, thickened, or possibly adherent. While there might be peri-oophoritis, yet pain due to this condition was of a different character. It had not the same neuralgic character, and was most likely to be called forth by menstrual congestion. Recently the speaker had reported a case in which the ovary had contained a nodule resembling bone, but which Dr. Welch had found to be a calcified Graafian follicle. This had set up irritation and had caused much pain. He found himself now recommending oophorectomy where some others who, perhaps, had operated too frequently formerly had stood back.

Dr. A. P. Dudley, of New York, referring to changes in the ovary as the cause of pain, spoke of several cases in which he had found more or less cystic degeneration, the result of ovulation, to which he had attributed the patient's sufferings. In these cases he had excised the diseased portions, reuniting the cut edges, thereby giving much relief. He did not believe in total ablation where partial excision was sufficient to remove the pathological condition causing the woman's suffering. There was no doubt that the direct cause of the pain was intra-ovarian pressure.

Dr. H. Marion-Sims, of New York, related three cases in which ablation of the appendages had not given complete relief, but the patient's suffering had increased instead, so that finally he had been forced to reopen the abdomen. By breaking up the plastic exudations which were found entire relief had been given. Like Dr. Dudley, he had found rectal examination sometimes of greater value than vaginal in detecting slight changes in the ovaries.

Dr. A. Reeves Jackson, of Chicago, said that the cases of intermenstrual pain which he had seen were hardly capable of classification, either as to their symptomatology, their pathology, or their treatment. The most prominent symptom was pelvic pain, and this, as everybody knew, might depend upon a great variety of causes. No plan of treatment had been successful in more than exceptional cases. Even ablation had been resorted to in some instances without success.

Dr. A. J. C. Skene, of Brooklyn, had seen some cases of intermenstrual pain the cause of which had been hard to make out. As to the advantage of rectal examination over vaginal, the speaker doubted this, although he had decided hereafter to practice it in all cases, as one of his patients had refused to pay his bill, not because he had not arrived at the same diagnosis as her later physician, but because he had not, like the latter, included a rectal as well as a vaginal examination in his attempts to arrive at that diagnosis.

Complications in Abdominal and Pelvic Surgery.—Dr. William H. Wathen, of Louisville, read a paper with this title. In his paper he referred to several articles that had appeared within a year or two condemnatory of the abuse of gynæcology, especially of the operation of laparotomy, and with those views he expressed himself as in accord. As experience was a valuable teacher, he thought it would not be amiss for him to detail the histories of five cases of laparotomy which he had performed during the past year. Although the cases had terminated favorably, yet there were involved certain features which might be instructive to young and enthusiastic operators. One of the most prominent lessons taught was that it was exceptional, on opening the abdomen, to find just what had been expected from previous examinations and deductions.

The first case was one of pelvic abscess on the right side, and laparotomy showed that it was of appendical origin. It was retroperitoneal, and had so raised the peritoneal coat as to expose the muscular structure of the uterus. The uterus was very much enlarged.

In the second case the abdomen was opened because of pain and the presence of a tumor larger than an orange, which reached up on the left side of the uterus several inches above the brim of the pelvis. Here he had found a malignant neoplastic mass surrounding the enlarged uterus, which, like that in the first case, had insinuated itself behind the sigmoid flexure of the colon. The ultimate result naturally would be fatal, but so far, since the operation, the patient had been free from pain.

The third patient's previous physician had diagnosticated appendicitis, but had not expressed an opinion of just what might be found. The speaker made an exploratory laparotomy and found extensive peritoneal adhesions, especially about the uterine appendages. The appendix vermiformis was adherent, but not otherwise specially diseased. A portion of the omentum was so badly torn during the operation that it was removed. Recovery took place without any untoward symptom arising. The local peritonitis was believed to have been due to an accident which had occurred some time previously.

The fourth patient had been suffering from pain in the region of the appendix for about ten days prior to being seen by the speaker. When he first made an examination, a tumor on the right side extending to the median line and to above the umbilicus was observed. There was present frequent pulse, some increase of temperature, and slight tympanites. On opening the abdomen, nearly a pint of pus was discharged, which was doubtless extraperitoneal, and due to appendicitis, although the appendix could not be found. The recovery was uneventful.

In the fifth case vaginal hysterectomy was done for cancer. It was of interest from the fact that without orders the nurse gave a vaginal douch of bichloride of mercury, 1 to 2,000, during the convalescence of the patient, and the fluid tore up the peritoneal adhesion and entered the peritoneal cavity. Recovery was gradual but sure, however, in the face of such complications. This case pointed to an opinion expressed by the speaker several years ago, which was severely criticised at that time—namely, that a vaginal injection should not be given after hysterectomy unless the peritonæum had been firmly closed by suture.

Lithopædion.—Dr. William T. Lusk, of New York, presented two specimens which attracted considerable attention. One was a lithopædion and the other was a uterine fibroid which resembled the former very closely. In the latter case the woman had been sent to the narrator for operation because of supposed extra-uterine pregnancy. He, however, after examination, believed the pregnancy was intra-uterine. The tumor could be felt through the abdominal wall and was very suggestive of extra-uterine gestation. An exploratory puncture was made, and the tumor discovered attached to the uterus by a long pedicle; adherent to the end was the other specimen, which was a lithopædion. The pregnancy was, as had been supposed, intra-uterine, and the woman had since given birth to a child. In the other case the woman had been a widow about thirteen years and was of immaculate character, yet the tumor was strongly suggestive of extra-uterine pregnancy, and, on being cut down upon, was found to be a calcified fœtus. A good recovery followed. When the patient was shown the specimen she expressed joy and said that the finding of the condition had relieved her of an embarrassment which had lasted thirteen years; that a number of years before she had been pregnant, and been supposed to be in labor, but the pains had ceased and no child had been born.

Dr. M. D. Mann, of Buffalo, related the histories of two cases of lithopædion. The abdominal pregnancy in one dated back about thirteen years. A point of special interest in one case was that the uterus was double, and natural gestations had previously taken place on one side. While the last gestation took place on the imperfect side and could not go to full term, strictly speaking it was not an extra-uterine gestation.

Elective Cæsarean Section; the Time of Operation.—Dr. Henry C. Coe, of New York, read a paper on this subject. While his personal experience in such operations was too small to warrant him in speaking *ex cathedra*, yet the lesson learned from both the failures and successes had been none the less valuable. The United States had contributed a fair proportion of the successful cases of the Sänger operation during the last ten years, seventy in all, with a maternal mortality of forty per cent. It was with considerable local pride that Brooklyn and New York gynæcologists could point to eighteen cases, the operations being performed by nine different surgeons, with a mortality of thirty-three and a third per cent. Four of the six fatal cases had been particularly unfavorable, while one death was due to puerperal mania, and could not be referred to the operation. It was interesting to note that the ten operations reported since 1889 had been practically elective—*i. e.*, they had been performed as a substitute for embryotomy, and they had all been successful. In the paper the speaker ventured to use the term "elective" in a narrower sense, restricting it to those few cases in which, after an examination of the patient during the latter months of pregnancy, it was deliberately decided to resort to the Cæsarean section as the first and only procedure to be adopted. Now, it was under those circumstances when we had the patient under observation in a hospital that the important questions arose, When was the most favorable time to operate? Should we choose our own time, or allow this to be determined for us by the onset of labor? There was a uniformity of opinion that the operation should not be undertaken until labor had begun. The dangers which, it had been urged, would be increased by those who disregarded this rule were serious hæmorrhage, due to imperfect contraction of the uterus, and retention of the lochial discharge, by reason of the non-dilatation of the cervix. The author was convinced that these dangers were purely imaginary, that the adverse opinion so generally and forcibly expressed was based purely on theory, and, like many other time-worn traditions in medicine, must yield to the evidence afforded by clinical observation. His personal experience, though limited to two cases, was that, other things being equal, the chances of success were increased rather than diminished by operating before the onset of labor. The contractile power of the gravid uterus had been proved to be such that this function could be confidently relied upon in cases of *accouchement forcé*. The author thought that the advantages secured by operating before labor might be briefly summarized as follows: 1. To the surgeon. After obtaining all the needed counsel, he could set his own time for the operation during the day, and was not summoned hurriedly at night to operate by an imperfect light and without his regular corps of assistants. Again, he secured the same conditions as in an ordinary cœliotomy—thorough preparation of the patient, rooms, instruments, etc. Since the patient was in the best possible condition, he was not hurried, was not obliged to "work against time," slurring those numerous details which were so essential to success. 2. To the patient. She was spared the suspense incident upon long waiting. This was an important consideration. We recognized the importance of the morale in ordinary cases of abdominal section, and how much more important was it where two lives were at stake! After having been thoroughly prepared for the operation, the patient went to the table in such a condition that the element of shock was reduced to a minimum and the subsequent convalescence was more rapid and uncomplicated. Asepsis was perfect. As no examination of the genital tract had been made on the day of the operation, there was no chance of infection in this way. Sepsis could never be positively excluded under contrary conditions, especially where labor was induced in the usual manner. The author had sought to show as concisely as possible that the two essentials to success—early operation and perfect technique—were intimately related to each other, so that in securing the one we secured the other. Operate early and you gave the patient and surgeon every possible advantage. The elective operation should be made such in every sense of the word.

The Remarkable Results of Antiseptic Symphysiotomy.—Dr. R. P. Harris, of Philadelphia, sent a contribution on this subject. After reviewing the historical data of symphysiotomy from its earliest performance up to the present date, the author referred briefly to the various incisive methods of delivery now in vogue. At the present writing the improved Cæsarean section undoubtedly occupied the first position in the estimation of obstetric surgeons. The Porro Cæsarean operation, when introduced, in 1876, gave promise of great popularity because it was less fatal in Europe than the classic method. But antiseptic or aseptic precautions, and multiple suturing of the uterus with deep and superficial stitches, generally of silk, had revolutionized the old method, and had largely overshadowed that of Professor Porro, so that now it was outnumbered as two to one. The Cæsarean operation with exsection of the uterus was of great value as an alternate to the less destructive method in cases where the condition of the endometrium endangered the life of the woman from sepsis. To have the patient escape the immediate and remote inconveniences of an adherent pedicle had been the desire of many operators and the basis of many fatal experiments until the desired end with a much diminished risk had been obtained. The next method of delivery under the knife was the subject under discussion. Some of its advocates were inclined to maintain that its limits of application prevented it from becoming a substitute for the improved Cæsarean operation, but this must be regarded as an error. An examination of the records of Leipsic showed that a large proportion of the sections had been made on women whose pelvic conjugate ranged from two inches and three quarters to three inches and three quarters. If the Cæsarean operator were to take only the cases that were below the pubiotomy limit of two inches and five eighths, he would have very few subjects for his form of delivery. The Cæsarean operation was performed in the interest both of mother and child in cases where craniotomy was dangerous to the former, and in the interest of the child mainly in cases where a long conjugate would make craniotomy a safe mode of delivery to the mother. Symphysiotomy was especially antagonistic to craniotomy, and its low grade of mortality rendered it an inviting and simple substitute for it. It was a much less formidable procedure than cœlio-hysterectomy, and might be undertaken by men of less surgical experience with good results. Craniotomy was a legacy of a barbarous age, and still had its advocates. The armamentarium required for symphysiotomy was very simple—viz., a scalpel, a Galbiati's probe-pointed sickle-shaped bistoury, a metallic catheter, silk ligatures, gauze, and cotton. After these had been sterilized, the parturient woman was to be placed on her back, at the side of the bed, with her knees drawn up and separated, the mons Veneris and labia majora were to be shaved, and the suprapubic region, the vulva, the perinæum, and the vulvo-vaginal canal disinfected. The depth, thickness, and direction of the symphysis were to be ascertained, and the fossa in its superior edge which marked the point of union of the two pubic bones sought for, then the inferior, anterior, and posterior faces of the pubes were to be examined. The female catheter should be inserted and given into the hand of an assistant, that he might depress the urethra from the pubic arch and at the same time carry it to the right side to save it from injury. A vertical incision was then to be made through the skin and fat above the pubes, about two inches and three quarters to three inches in length, ending about three quarters of an inch above the symphysis, cutting the tissues gently and passing in a line toward the left of the clitoris, so as not to injure that structure. For a short space the recti muscles should be severed from their attachment to the two pubic bones, the left index finger introduced into the opening, and the retropubic tissue separated. Then the palmar face of the finger should be applied directly against the posterior face of the symphysis and with it the inferior margin of the articulation hooked while the assistant attended to the catheter as stated. The operator was then to introduce the Galbiati bistoury and hook it around the articulation, cutting the interosseous ligaments and cartilage from within outward and from below upward. When the section had been made it would be known by a creaking sensation and a separation of the bones from an inch and a quarter to an inch and a half. After this step the wound was to be covered with the gauze dipped in bichloride solution (1 to 4,000) and the extraction of the fœtus attended to, undue separation of the two innominate bones being antagonized by pressure with the hands of the assistants. During the passage of the head the amount of pubic separation should be ascertained, the vagina sprayed, and, when the placenta was expelled, six or eight interrupted silk sutures inserted into the edges of the wound, which should be dressed with sublimated cotton (1 to 2,000), and the pelvis and lower extremities should be bandaged. The tabular record of forty cases of symphysiotomy was presented. The hospital patients numbered thirty, and the private patients ten. Those credited to the *Incurabili*, of Naples, had been operated upon in the maternity house, and were nine in number; and those credited to the obstetric clinic belonged to that department of the Royal University of Naples, and numbered fifteen. In the only fatal cases the patients had died of metroperitonitis, which was probably puerperal and not traumatic. The author was unable, from very careful research, to find any case resulting in failure of union of the pubes, or producing permanent lameness.

Cœliotomy after Labor.—Dr. William H. Parrish, of Philadelphia, read a paper on this subject. He said that the chief indication for performing this operation after labor was the presence of pus. This was sometimes located in the cellular tissue in the pelvis, where it could be punctured through the vagina. It was not always safe, however, to wait with the expectation that it might locate itself sufficiently low to permit of evacuation without opening the abdomen. It was only too frequently that the operator was called at a period when the patient was hopelessly prostrated from metastatic abscess or serious complications. It was found in a few cases that the abscess could be evacuated near Poupart's ligament extraperitoneally. Even in these cases median cœliotomy might become necessary to determine the exact situation of the pus. The profession at large should, however, be impressed with the fact that it was rare to find suppuration in the intrapelvic cellular tissue and advised to cause a closer watch over other points for its appearance. If there should be pus in the tubes, the danger could surely be appreciated of waiting too long before doing cœliotomy. It should be remembered also that suppurative disease in the tubes and other parts might exist before labor. For some time it had been recognized that abscess might exist in the uterine parenchyma after labor, and it was recommended in such cases that the uterus and its appendages be removed. Doubtless when the abscess was of large size or septic infection of the uterus was far advanced such a radical operation would be justifiable, but that it was not always indicated was illustrated by the history of a case which the author described. In this case the abscess was of considerable size, but did not penetrate into the uterine cavity. A wedge-shaped portion of the uterus, including the abscess, was removed, the walls of the wound were then sutured together with fine silk, and the patient made a good recovery. During the progress of a plastic peritonitis cœliotomy was seldom indicated unless pus was present. The author closed his remarks with a consideration of the treatment of diffuse septic suppurative peritonitis. It had been proposed that in cases of this class the abdomen should be opened, the peritoneal cavity washed out, and drainage established. A supplement to this procedure had also been suggested—that the uterus and its appendages should be removed, with a view to getting rid of an important source of infection. It was a question, however, whether the removal of the uterus and its appendages would not add too much to the shock to be of benefit. The uterus should at least be cleansed by douching and curetting.

Certain Aspects of Gonorrhœa in Women.—Dr. C. P. Noble, of Philadelphia, made some remarks on this subject. The chronicity of this disease, especially when it had attacked the tubes and ovaries, was well known. There was no evidence to show that a single case of gonorrhœal salpingitis and oophoritis had ever so far been cured that the organs had regained their reproductive function or that the fimbriated extremity of the tube ever became patulous. The speaker referred to recent bacteriological studies of gonococci, as found in various parts of the reproductive tract, showing pretty conclusively that they traveled up the tubes. One observer had found the gonococcus in an ovarian abscess. The question was also brought up as to whether, when the appendages of one side were removed for disease, if those on the other side were not so liable to infection as to justify removal at the first operation. The speaker was inclined to remove the healthy as well as the diseased appendages in women who had borne children, and to leave the question for decision by the patient if she was young. To avoid gonorrhœa of the tube and ovary, the physician should, if possible, prevent the infection from extending to the endometrium.

Retroperitoneal Tuberculosis simulating Hernia.—Dr. Edward P. Davis, of Philadelphia, presented the history of an interesting case of this condition. The patient had first begun to suffer with pain in the right inguinal region, which, she thought at the time, was due to having lifted a heavy weight. A year previous to coming under the speaker's notice she had felt something give way, followed by bearing-down pains and pain in the right ovarian region, for which she was obliged to keep her bed for eleven weeks. During a greater part of the time that she was in bed she had metrorrhagia. On recovering, she had resumed her work as a domestic, and had continued at it until, being seized with severe pain in the right ovarian region, the speaker was called to see her. It was found that her father had died of tuberculosis. There was no history of alcoholism, gonorrhœa, or syphilis. The patient was well nourished, with perfectly normal thoracic viscera. In the right inguinal region there was a tense swelling. Vaginal examination was negative. The temperature ranged from 100° to 102·5° F. The pulse was rapid. The condition seemed to point to hernia or tubal disease. She was anæsthetized, the tumor in the right inguinal region was incised, and the resemblance to a hernia persisted during dissection of the sac. It was impossible, however, to reduce it, and, as collapse threatened, the abdomen was opened in the median line. On trying to reduce the mass, the finger penetrated an abscess which contained several ounces of pus. The pelvic peritonæum was thickened and engorged. Nothing was found to account for the abscess; it was consequently inferred that it was due to retroperitoneal tuberculosis. The patient recovered.

(*To be concluded.*)

Book Notices.

The Diagnosis of Diseases of the Nervous System: A Manual for Students and Practitioners. By Christian A. Herter, M. D., Physician to the Class of Nervous Diseases, Presbyterian Hospital Dispensary. New York and London: G. P. Putnam's Sons, 1892. Pp. viii–628. [Price, $3.]

In the opening chapter of this work the author reviews the histology and anatomy of the nervous system, presenting the latter in such a way that it offers no stumbling block to the student and thus enables him to acquire the groundwork necessary for any study of nervous diseases. We know of no work of this character in which the conciseness and clearness of this chapter are surpassed.

The second chapter, on the symptomatology of nervous diseases, includes that presented by the muscular system, that by the special-sense organs, and that by lesions producing mental disturbances.

With a thorough comprehension of the subject matter of these chapters it will be possible for the student to appreciate the directions for localization of a lesion in any portion of the nervous system, as well as the directions for diagnosticating the nature of such a lesion.

The chapter on the diagnosis of clinical types is very well written, the author apparently having omitted nothing that can assist his reader. A separate chapter is devoted to a consideration of the distinction between functional and organic nervous diseases.

The chapter on the examination of the patient is one of the best in the book.

The convenience of the work would have been materially enhanced if it had a better index; many terms, etc., in the work are not referred to in the index; occasionally an incorrect reference is made; and we note in the instance of dyslexia that, while correctly spelled in the text, it is incorrectly spelled in the index.

Dr. Herter has given the profession a timely volume, for every day the general practitioner finds occasion to employ just such information as he can here obtain. And the student is especially fortunate, for in no work on diseases of the nervous system can he obtain similar information without much more general reading. The text is not interrupted by numerous references to the sources of the author's information, and in a work of this character the author has done well to escape the temptation of displaying the breadth of his reading. The volume must prove serviceable to all physicians.

A Manual of Organic Materia Medica. Being a Guide to Materia Medica of the Vegetable and Animal Kingdoms, for the Use of Students, Druggists, Pharmacists, and Physicians. By John M. Maisch, Ph. M., Phar. D., Professor of Materia Medica and Botany in the Philadelphia College of Pharmacy. Fifth Edition. With Two Hundred and Seventy Illustrations. Philadelphia: Lea Brothers & Co., 1892.

The exhaustion of the fourth edition of this work in two years after its publication is an evidence of the deserved popularity that it has attained.

All the recent observations and investigations on the various articles of organic materia medica have been incorporated in this edition, and a general revision of the text has made this virtually a new work. A number of new illustrations are noticed that materially enhance the usefulness of the volume.

This edition deserves a renewal of the commendation we have heretofore bestowed upon the work, and we feel sure that a continued popularity will reward the intrinsic merit of the volume.

BOOKS, ETC., RECEIVED.

The Principles of Theoretical Chemistry, with Special Reference to the Constitution of Chemical Compounds. By Ira Remsen, Professor of Chemistry in the Johns Hopkins University. Fourth Edition, thoroughly revised. Philadelphia: Lea Brothers & Co., 1892. Pp. xi–13 to 322.

A Dictionary of Terms used in Medicine and the Collateral Sciences. By the late Richard D. Hoblyn, M. A. Oxon. Twelfth Edition, revised throughout, with Numerous Additions, by John A. P. Price, B. A., M. D. Oxon. London: Whittaker & Co., 1892. Pp. viii to 822. [Price, $2.25.]

Genito-urinary and Venereal Diseases. A Manual for Students and Practitioners. By Charles H. Chetwood, M. D., Visiting Surgeon, Demilt Dispensary, Department of Surgery and Genito-urinary Diseases, New York. Series edited by Bern B. Gallaudet, M. D., Demonstrator of Anatomy, College of Physicians and Surgeons, New York. Philadelphia: Lea Brothers & Co., 1892. Pp. 6–17 to 178. [*The Students' Quiz Series.*]

Materia Medica and Therapeutics. A Manual for Students and Practitioners. By L. F. Warner, M. D., Attending Physician, St. Bartholomew's Dispensary, New York. Series edited by Bern B. Gallaudet, M. D., Demonstrator of Anatomy, College of Physicians and Surgeons, New York. Philadelphia: Lea Brothers & Co., 1892. Pp. 8–17 to 223. [*The Students' Quiz Series.*]

Obstetrics. A Manual for Students and Practitioners. By Charles W. Hayt, M. D., House Physician, Nursery and Child's Hospital, New York. Series edited by Bern B. Gallaudet, M. D., Demonstrator of Anatomy, College of Physicians and Surgeons, New York. Philadelphia: Lea Brothers & Co., 1892. Pp. 7–17 to 190. [*The Students' Quiz Series.*]

Epitome of Mental Diseases, with the Present Methods of Certification of the Insane, and the Existing Regulations as to "Single Patients," for Practitioners and Students. By James Shaw, M. D. Qu. Univ., Irel., Assistant Medical Officer, Grove Hall Asylum, Bow, London. New York: E. B. Treat, 1892. Pp. xv to 345. [Price, $2.75.]

Handbuch der physiologischen Optik. Von H. von Helmholtz. Zweite umgearbeitete Auflage. Mit zahlreichen in den Texte eingedruckten Holzschnitten. Siebenten Lieferung. Hamburg und Liepzig: Leopold Voss. Pp. 481 to 560.

Transactions of the Association of American Physicians. Seventh Session, held at Washington, D. C., May 24, 25, and 26, 1892. Volume VII.

The Operative Treatment of Enlargement of the Prostate. Based upon the Records of Upward of One Hundred and Forty Cases. Three Lectures delivered at the Royal College of Surgeons. By C. W. Mansell Moullin, M. A., M. D. Oxon., F. R. C. S., etc. London: John Bale & Sons, 1892. Pp. 82.

Four Hundred Cases of Phthisis. By F. M. Sandwith, M. D., Physician to Kash el Aini Hospital, Cairo.

Concerning the Employment of Light in the Treatment of Disease. By William F. Arnold, M. D., Passed Assistant Surgeon, United States Navy. [Reprinted from the *Southern Practitioner.*]

Hernia in Infancy and its Correct Treatment. By Alexander Dallas, M. D., New York. [Reprinted from the *International Journal of Surgery.*]

Excision of Tubercular Knee Joint. A Case of Incipient Hip-joint Disease. By H. Augustus Wilson, M. D., Philadelphia. [Reprinted from the *American Journal of Surgery.*]

Early Symptoms of Hip Disease and Ætiology of Hip Disease. Treatment of Abscess in Hip Disease. By H. Augustus Wilson, M. D., Philadelphia. [Reprinted from the *Archives of Pædiatrics.*]

Clinical Report of Cystectomy for Polycystic Ovarian Tumor. By Professor Howard A. Kelly, at the Johns Hopkins Hospital. [Reprinted from the *Medical and Surgical Reporter.*]

When shall we trephine in Fractures of the Skull? By Emory Lanphear, M. D., Ph. D., Kansas City, Mo. [Reprinted from the *Kansas City Medical Index.*]

Operation for the Removal of the Gasserian Ganglion. By Emory Lanphear, M. D., Ph. D., Kansas City, Mo. [Reprinted from the *International Journal of Surgery.*]

Colpo-perineorrhaphy. By Edward W. Jenks, M. D., of Detroit. [Reprinted from the *Journal of the American Medical Association.*]

Clinical Lecture delivered at the Second Annual Meeting of the Association of Military Surgeons of the United States. By N. Senn, M. D., Ph. D., Chicago. [Reprinted from the *Second Annual Proceedings.*]

Observations on the General Pathology of Cancer, especially of the Breast. By W. Roger Williams, F. R. C. S. Eng. [Reprinted from the *Medical Chronicle.*]

The Decidua in the Diagnosis of Extra-uterine Pregnancy. By Edward A. Ayres, M. D., New York. [Reprinted from the *American Journal of Obstetrics and Diseases of Women and Children.*]

Some Contributions to the Study of the Muscular Sense. By George J. Preston, M. D., Baltimore. [Reprinted from the *Journal of Nervous and Mental Disease.*]

The Treatment of Epilepsy. By Frederick Peterson, M. D., New York. [Reprinted from the *Buffalo Medical and Surgical Journal.*]

Progress in the Care and Colonization of Epileptics. By Frederick Peterson, M. D., New York. [Reprinted from the *Journal of Nervous and Mental Disease.*]

The Sensory-motor Functions of the Brain. By L. Harrison Mettler, M. D., Chicago, Ill. [Reprinted from the *Medical Record.*]

A Plea for the Medical Expert. By L. Harrison Mettler, M. D., Chicago, Ill. [Reprinted from the *Journal of the American Medical Association.*]

Habitual Abortion. By E. S. McKee, M. D., Cincinnati, Ohio. [Reprinted from the *American Journal of Obstetrics and Diseases of Women and Children.*]

Wintering in Egypt. By Frederick Peterson, M. D., New York. [Reprinted from the *Medical Record.*]

Annual Lectures delivered before the Alumni Association of the College of Physicians and Surgeons of Baltimore, April 11 and 12, 1892. By W. E. B. Davis, M. D., Rome, Ga.

A Review of Ideality of Medical Science. A Detailed Plan of Reformation of the Practice and Study of Medicine. By Maurice J. Burstein, M. D., New York. [Reprinted from the *Doctor's Weekly.*]

Annual Message of Benjamin J. Baldwin, M. D., President of the Medical Association of the State of Alabama, Montgomery, April 12, 1892.

Tenth Annual Report of the Provincial Board of Health of Ontario, being for the Year 1891.

The Ready-reference Hand-book of Diseases of the Skin. By George Thomas Jackson, M. D. (Col.), Chief of Clinic and Instructor in Dermatology, College of Physicians and Surgeons, New York, etc. With Fifty Illustrations. Philadelphia: Lea Brothers and Co., 1892. Pp. iv–24 to 553.

Medical Microscopy: A Guide to the Use of the Microscope in Medical Practice. By Frank J. Wethered, M. D. (Lond.), Member of the Royal College of Physicians, etc. With Illustrations. Philadelphia: P. Blakiston, Son, & Co., 1892. Pp. xix–9 to 406.

A Manual of the Operations of Surgery for the Use of Senior Students, House Surgeons, and Junior Practitioners. Illustrated. By Joseph Bell, M. D., F. R. C. S. Edin., Consulting Surgeon to the Royal Infirmary, etc. Seventh Edition, revised and enlarged. Edinburgh: Oliver & Boyd, 1892. Pp. xvi to 360.

On Congenital Obliteration of the Bile-ducts. By John Thomson, M. D., Fellow of the Royal College of Physicians of Edinburgh, etc. Edinburgh: Oliver & Boyd, 1892. Pp. 52.

A Primer of the Art of Massage (for Learners). By Dr. Stretch Dowse. Illustrated. Bristol: John Wright & Co., 1892. Pp. vi to 151.

Tuberculin and the Living Cell. An Inquiry as to how the One aids the Other in the Fight against Tuberculosis. By Charles Denison, A. M., M. D., of Denver, Colorado. [Reprinted from the *Medical News.*]

The Necessity and Best Methods of regulating the Practice of Medicine. By Perry H. Millard, M. D. [Reprinted from the *Journal of the American Medical Association.*]

Biographical Sketch of John C. Hupp, A. M., M. D., of Wheeling, W. Va. [Advance sheets from *Encyclopædia of Contemporary Biography.*]

Contributions of Physicians to English and American Literature. By Robert C. Kenner, A. M., M. D. [*The Physician's Leisure Library.*]

Fourth Annual Report of the Commissioner of Health of Milwaukee.

Treatment of Fractures of the Lower End of the Humerus and of the Base of the Radius. By John B. Roberts, A. M., M. D., Philadelphia. [Reprinted from the *Annals of Surgery.*]

Miscellany.

The Tri-State (Georgia, Alabama, and Tennessee) Medical Society.—The following titles are announced for the annual meeting in Chattanooga next week: Eye Symptoms in General Disease, by Dr. J. L.

Minor, of Memphis; Talipes Equino-varus (with presentation of patients), by Dr. C. W. Barrier, of Rome, Ga.; Sequences of Otitis Media Purulenta, by Dr. T. Hilliard Wood, of Nashville; Report of 1,050 Strabismus (Cross-eye) Operations, with some Observations on the Same, by Dr. A. W. Calhoun, of Atlanta; Hypertrophic Rhinitis, by Dr. Gilbert I. Cullen, of Cincinnati; Croupous Rhinitis, with Report of Cases, by Dr. J. W. Long, of Randleman, North Carolina; Special *vs.* General Practice in Medicine, by Dr. W. J. Killen, of Birmingham, Ala.; The Present Status of Medical Education in the South, by Dr. Luther B. Grandy, of Atlanta; Synovitis, by Dr. J. B. Cowan, of Tullahoma, Tenn.; A Clinical Study of the Relations between Scarlet Fever and Diphtheria, by Dr. W. D. Hoyt, of Rome, Ga.; Pharmaceutical Preparations of the Present Day, by Dr. John C. LeGrand, of Anniston, Ala.; The Comparative Value of Proprietary and Pharmaceutical Preparations, by Dr. Harry Wise, of Chattanooga; The Treatment of Inguinal Hernia, by Dr. J. W. Handly, of Nashville; Surgery—Things to Do and Things not to Do, by Dr. Willis F. Westmoreland, of Atlanta; The Treatment of Indolent Buboes, by Dr. W. B. Rogers, of Memphis; The Prepuce: its Use and its Dangers, by Dr. Erasmus T. Camp, of Gadsden, Ala.; Stricture of the Male Urethra: its Diagnosis and Treatment, by Dr. W. L. Gahagan, of Chattanooga; A Case of Injury to some of the Cervical Vertebræ, combined with Transverse Fracture of the Occipital Bone, by Dr. R. H. Hays, of Union Springs, Ala.; Report of a Case of Rupture of the Abdominal Muscles during Normal Labor, by Dr. J. W. Hallum, of Carrollton, Ga.; Report of a Case of Intestinal Obstruction, by Dr. J. F. Huey, of Birmingham, Ala.; A Few Selected Cases in Laparotomy, by Dr. W. H. Wathen, of Louisville; The After-treatment of Abdominal Operations, by Dr. W. E. B. Davis, of Birmingham, Ala.; Hepatic Abscess, by Dr. E. B. Ward, of Selma, Ala.; Report of Treatment of Sterility, by Dr. J. M. Head, of Zebulon, Ga.; Extra-uterine Pregnancy, by Dr. Richard Douglass, of Nashville; A Case of Imperforate Hymen, by Dr. Andrew Boyd, of Scottsboro, Ala.; Puerperal Eclampsia, with Report of Cases treated with Nitroglycerin, by Dr. R. M. Harbin, of Calhoun, Ga.; Erythema, by Dr. Henry W. Blanc, of Sewanee, Tenn.; Epithelioma: some Experience, by Dr. M. B. Hutchins, of Atlanta; Drunkenness and its Gold Cure (?), by Dr. John P. Stewart, of Attalla, Ala.; Summer Diarrhœa of Children, by Dr. G. T. Prince, of Whiteside, Tenn.; Advanced Theories in Psychical Science, by Dr. John E. Purdon, of Cullman, Ala.; Dysentery and the most Successful Ways of treating it, by Dr. D. H. Baker, of Gadsden, Ala.; The Diagnosis of Fevers, by Dr. J. A. Long, of Cleveland, Tenn.; Cholera and the New York Episode, by Dr. Joseph Holt, of New Orleans.

The Eleventh International Medical Congress.—As a recent notice in this journal has informed our readers, the congress will meet in Rome, Italy, from September 24 to October 1, 1893. By an official letter dated August 22, 1892, signed by Professor Guido Baccelli, president, and Professor E. Maragliano, secretary-general, Dr. A. Jacobi, of New York, has been directed to form an American sub-committee. Its membership is not yet complete, but on the list there are already, besides that of the chairman, the names of Dr. William Osler, of Baltimore, Dr. S. C. Busey, of Washington, Dr. N. S. Davis, of Chicago, Dr. Charles A. L. Reed, of Cincinnati, Dr. William Pepper, of Philadelphia, Dr. F. Peyre Porcher, of Charleston, Dr. James Stewart, of Montreal, and Dr. Alexander J. C. Skene, of Brooklyn. In the interest of facilitating the trip to Italy and reducing the expense, arrangements will be made with the steamship companies. According to a communication from the central committee, contained in a letter of the secretary-general's dated September 14th, the North German Lloyd Company proposes to reduce the fare to Genoa by twenty per cent., and that of the return trip by ten per cent. It is expected that still more favorable terms will be secured.

The New York State Association of Railway Surgeons will hold its second annual meeting in New York on Monday, November 14th, under the presidency of Dr. George Chaffee, of Brooklyn. Besides the president's address, titles are announced as follows: Conservative Surgery as applied to Railway Injuries, by Dr. R. S. Harnden, of Waverly; A Contribution to the Study of Amputations at the Hip Joint, by Dr. J. B. Murdock, of Pittsburgh; Osteogenesis and Osteoplasty in Crushing Lesions of the Extremities, by Dr. Thomas H. Manley, of New York; Expert Examination and Testimony in Railway Cases, by Dr. B. A. Watson, of Jersey City; The Transportation of the Wounded upon Railways, by Dr. W. B. Outten, of St. Louis; Calendula as a Surgical Dressing, by Dr. A. Wilson Dods, of Fredonia.

Antipyrine in Epistaxis.—Dr. E. G. West, of Boston, says that he has yet to find an agent so reliable in epistaxis as antipyrine. It is his custom, when a case of unusual violence occurs, to saturate a pledget of cotton with a solution of antipyrine or with the dry powder and introduce it into the nostril. It has stopped the bleeding in every instance that he has applied it. The patient, by this method, is spared the disagreeable tarry clots formed by the solutions of iron so commonly used for this purpose.

Formaldehyde as a Disinfectant.—Formaldehyde, or formic aldehyde, is said to be remarkable for its antiseptic powers and sterilizing properties. Trillat finds that urine mixed with this fluid is incapable of putrefaction. Its sterilizing power in broth containing *Bacillus anthrasis* is still more marked than that of corrosive sublimate."—*Druggists' Circular and Chemical Gazette.*

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

THE NEW YORK MEDICAL JOURNAL, OCTOBER 29, 1892.

Original Communications.

THE TREATMENT OF CHOLERA.*

BY H. A. HARE, M. D.,
PROFESSOR OF THERAPEUTICS IN THE JEFFERSON MEDICAL COLLEGE, PHILADELPHIA.

THE subject of the treatment of cholera, which seemed of such extraordinary importance but a few days ago, has somewhat decreased in interest owing to the sense of increased security which has more recently pervaded society. Nevertheless, it still remains proper for us to have correct and clearly outlined ideas as to how to treat the disease should it gain access to our population. I shall not attempt to give a full history of the various treatments which from time to time have been used in the care of cholera patients, but pass directly to a consideration of the remedial measures largely used at present which give sufficiently good results to lead us to employ them. It is to be remembered that the discovery of the spirillum of cholera has not very distinctly modified our therapeutics except in one or two ways which will be pointed out as I proceed. The subject of personal prophylaxis does not fall under my charge, nor does that of preventive treatment. Dividing the disease into three stages, we find as the earliest symptom some disturbance of peristaltic movement with or without pain, or in other instances the patient is attacked with a sudden flux of the intestinal contents. If there is a history of the ingestion of bad or indigestible food there is no doubt whatever that this foreign material must be got rid of by the use of castor oil or sulphate of magnesium, the latter being the best because it is more rapid and less apt to cause griping. No purgative should be given unless the history of the ingestion of bad food is most direct and clear.

When the attack is, as usual, sudden in its onset, the question arises, Shall we resort to opium by the mouth? The answer, after having carefully considered the statements of a large number of authors, is, that we should not use opium by the mouth or hypodermically except in cases where the pain or cramps are so excessive as to absolutely require the drug. In other words, it is to be given for the pain, not for the diarrhœa. Should opium be used, it is infinitely better to employ it by the rectum in the manner to be described later, and if it is necessary to use it by the mouth, only the denarcotized opium or the deodorized laudanum should be employed, since these preparations are less apt to cause nausea than their fellows.

Any one who has seen the nausea and depression following the use of full doses of opium in those who are susceptible to it will be strongly impressed with this fact, and in America at least adults of the better class as well as children of all classes are often so seriously depressed by full doses of opium as to be on the verge of collapse. Not only would the onset of such symptoms seriously complicate like symptoms caused by the disease, but there seems to be no doubt that the use of the drug so seriously perverts the functions of the stomach as to make the entrance of germs comparatively easy. Recent researches in regard to the bacillus of Koch show that an acid medium is unfavorable to its existence, and other researches have proved that opium seriously inhibits the secretion of gastric juice. If these two results are correct, then the generally accepted assertion of Hueppe that the bacilli find a strong barrier in the acid secretion of the stomach is not only important, but of such a character as to prohibit the use of opium. Finally, it has recently been pointed out that the stomach actually excretes opium even when it is given hypodermically, and that the opium nausea can be avoided in the ordinary individual if the stomach be washed out as fast as elimination takes place. The hypodermic method is therefore little better than the mouth administration of the drug. Combining all these disadvantages with the fact that the majority of observers are doubtful as to its usefulness, we ought certainly to resort to opium most guardedly if at all.

Camphor, on the other hand, seems to be universally regarded as a most useful drug, tending at once to stop diarrhœa and relieve the pain and cramps from the beginning to the end of the attack. Whether camphor exercises any germicidal effect on the cholera bacillus we do not know. Certain it is that volatile oils all possess distinct antiseptic powers. Aside from any such influence, camphor is useful as a general systemic stimulant, and has been proved by wide clinical observation to have a very extraordinary power in the control of all forms of serous diarrhœa, particularly true cholera. The spirit of camphor proved most effective in the cholera epidemic of 1866 in Bohemia, and the patients themselves stated that they could not praise sufficiently the delightful sensation of abdominal warmth and the stimulating effect of the drug.

Particularly was this the case where other alcoholic preparations had been used, such as "schnapps"; frequently the use of camphor so controlled the diarrhœa and stimulated the torpid kidneys that anuria was set aside in twenty-four hours. Under these conditions camphor wine was found to be very useful, and was made by adding seventy-five grains of finely powdered camphor to a bottle of strong red wine, to which was also added gum arabic and alcohol. The camphor was first dissolved in the alcohol and then thoroughly mixed with the wine. The dose of this mixture was a teaspoonful in peppermint-tea every hour to a child of six years, for an older child a dessertspoonful, and for an adult a wineglassful. Those who first used this mixture were wiser than they thought, for the recent studies of Pick have shown that both red and white wine are distinctly inhibitory to the growth of the spirillum of cholera, probably because of the tannic or other acids which they contain as well as the alcohol.

A remedy the use of which is based on very rational grounds is salol, and probably the newer drug, salophen, which theoretically is much better than the former, because it is less poisonous. According to the interesting studies of Löwenthal, salol seems to be peculiarly antagonistic to the bacillus of Koch. This investigator added to a fifty-gramme alkaline solution of pancreatic juice ten grammes of salol, and to this mixture three cubic centimetres of a good bouillon culture of the bacillus. Examinations in from forty-eight hours to a week showed this to be absolutely sterile. It was further proved that the salol was inactive until broken up into its component parts—phenol and salicylic acid. In his experiments on mice, Löwenthal found the drug protective. Hueppe also asserts that the use of salol prevents the development of anuria. This is probably accomplished by its action on the bacillus, thereby preventing the diarrhœa and the formation of the toxine, both of which influence the blood.

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* Read before the Philadelphia County Medical Society, September 28, 1892.

Gonzalez, of Salvador, who used salol in the dose of thirty grains at the first and fifteen grains at the second dose, lost only three out of fifty-three sufferers.

Nicholson, of Patna, India, has also obtained splendid results from salol, given in fifteen-grain doses every three or four hours for a day or two. The salol produced a wonderful improvement, and in all his eighteen cases recovery took place, although eleven of the patients were in a state of collapse when the salol was first given. Hehir treated eighty-eight cases with corrosive sublimate, with a mortality of 44·7 per cent., and eleven cases with salol with no deaths.

A remedy originally used by Dr. R. G. Curtin, of Philadelphia, with extraordinary results has been proved by recent study to be eminently rational—namely, sulphuric acid. This drug not only is acid and so deleterious to the bacillus, but, in addition, is astringent, and is probably eliminated as a sulphate by the lower bowel. As is well known, ordinary cholera morbus yields readily to its influence.

In addition to the treatment already given, which may be used in the second as well as in the first stages, we have measures which must be resorted to for the relief of the dominant symptoms which manifest themselves as the disease progresses.

The symptoms now to be combated are vomiting, excessive purging, and cramps in the extremities, and, as the result of these, exhaustion, collapse, and the advent of the algid stage. By far the best results obtained by any one line of therapeutics at this time certainly follow the employment of salol and camphor by the mouth, with enteroclysis and the use of hot baths; or, if these are not possible, hypodermoclysis and the employment of a hot-water bed, or, finally, hot bottles and bricks, for the patient largely dies of cold and of internal congestion of thickened blood which the heart and vaso-motor system are unable to control. Atropine and strychnine are very useful at this time, but chloric ether is better than either, given subcutaneously or by the mouth.

The treatment of cholera in all its stages by enteroclysis or the washing out of the bowel was first used by Cantani within the last decade. The method yielded such good results in his hands that he enthusiastically employed it in a large number of cases, and caused a number of other physicians to use it. The results reached by the great number of clinicians who have used this treatment are, however, not equally encouraging, probably because in many cases the technique of the operation was faulty, or the patient already so far advanced in the disease as to render futile any efforts in his behalf. The method consists in the slow irrigation of the large and small bowel by way of the rectum by means of a solution urged on by the hydrostatic pressure of a fountain syringe. The solution contains as its chief constituents tannic acid, which is added in the proportion of from one to five drachms to two quarts of water, and an ounce and a half of wine of opium.

Carbolic acid is too poisonous, salicylic acid too insoluble, corrosive sublimate too poisonous and too easily decomposed.

Cantani employed in other cases a mixture made of infusion of chamomile flowers, 2,000 parts; tannic acid, 10 to 20 parts; gum arabic, 30 parts; tincture of opium, 2 parts.

Cantani considers that the passage of the ileo-cæcal valve is essential for the success of his methods, and if this is the case the reporters who have failed to obtain satisfactory results from this treatment have probably failed to do more than irrigate the colon. The importance of irrigating the ileum is great, since it is in this portion of the alimentary canal that the disease is most active. Aside from the very extraordinary results obtained by Cantani, we have those of Lustig, who treated 117 cases of cholera in this way with 34 deaths, and 193 cases by other methods (corrosive sublimate enteroclysis) with 146 deaths. Such results as these are most encouraging, and they are supported by those of Bela Angyan, of Budapesth, who, in 1886, treated 76 cases of choleraic diarrhœa with 76 recoveries, 85 cases of cholerine with 85 recoveries, 90 cases in the algid stage with 58 recoveries, and 211 in a far advanced stage of asphyxia with 44 recoveries and 167 deaths.

Nor is this treatment by tannic-acid injection founded upon mere empiricism, for Cantani and others have found that tannic acid in the strength of one per cent. inhibits the spirillum in an hour and a half at 98·1° F., and one half per cent. in six hours seriously impairs its vitality. Cantani also asserts that tannic acid neutralizes the toxine formed by the cholera bacillus.

This treatment therefore contracts the leaking blood-vessels, stops the growth of the bacilli, prevents the absorption of toxines, acidifies the intestine, stimulates the nervous system, warms the body, prevents anuria, and avoids collapse.

It is but fair to state that Oser seriously doubts the value of the method, for he asserts that the mortality from cholera epidemics remains as high in Naples as before Cantani's method was introduced, and he questions Cantani's statement that he is enabled to pass the liquid through the ileo-cæcal valve, particularly if only two quarts are used. He asserts, too, that the ileo-cæcal valve is ordinarily impassable, but is unable to state that it is not patulous in cholera. There is evidence that this valve is patulous, or at least passable, and therefore this objection falls to the ground; but we must confess that two quarts of water will hardly fill the colon and irrigate the ileum. Notwithstanding these difficulties, Oser admits that the treatment certainly modifies the more serious symptoms, but thinks that many of Cantani's cases were not true cholera but choleraic diarrhœa, and that the results obtained would be equally favorable if tannic acid and opium had been given by the mouth. On the other hand, it is only fair to Cantani to state that he does not claim an invariable cure from his method, only stating that he can reduce the mortality almost to nothing, provided the cases are submitted to treatment before they have passed from the earlier to the desperate stages of the malady. This is practically a great gain, and we can not expect much more unless we raise the dead.

Closely connected with this matter of irrigation is the assertion of Senn, in this country, from his experiments upon animals, that it is not safe to pass water through the ileo-colic valve, owing to the danger of rupturing the peritoneal coat of the bowels; but the clinical experience of Cantani and his followers, and the experiments which have been made by Dr. Martin and myself within the last two or three years, are so opposed to the conclusions reached by Senn that I may be allowed to speak of them.

Our first series of experiments simply served to illustrate the clinical fact which is familiar to you all—namely, that rectal injections, when performed with force and rapidly, generally result either in such active opposition on the part of the bowel or in so much pain to the patient as to prevent their being satisfactorily completed. We found that the most important point to be considered in the irrigation of the large and small bowel was the introduction of the liquid so slowly that the bowel scarcely appreciated the distention which it was undergoing. By this means it was perfectly possible to pass liquid from the rectum to the mouth without any evil symptoms being produced.

Without detailing the minute points in our experiments, suffice it to state that we found that a pressure of from one to two pounds was ample to start with, and that, after the colon had been distended, this pressure might be increased to as much as eight pounds for the purpose of forcing the liquid through the ileo-colic valve. A pressure exceeding eight pounds was, however, proved to be too great, or at least dangerous in some cases. Ordinarily a pressure of five to six pounds was quite sufficient.

It was also found that the use of a Davidson syringe, or any other form of pumping syringe, nearly always resulted in antagonism upon the part of the bowel wall, the mere pulsating influence of the entering fluid seeming to excite reflex irritation. Further than this, cases of rupture of the bowel and death from the use of an unknown amount of force for the Davidson syringe have occurred, and in the fifty-ninth volume of the *Medico-chirurgical Transactions* there are many of these accidents recorded.

If, after forty-five minutes of gentle but constant trickling pressure, the ilieo-colic valve has not been forced, we can rest assured that there is either something faulty with our technique, or else that the operation should cease. Generally twenty minutes is sufficient for this purpose.

I can not leave this subject without calling your attention to the importance of carefully warming the solutions used for injection. In a disease like cholera, where the natural tendency is toward the algid state and collapse, bodily heat is, as I have already pointed out, most important for the preservation of the patient's life. When the injection is given it passes into the very heat citadels of the body, and, if cold, produces even in health a dangerous chilling of organs which are ordinarily specially protected from cold by the omental apron and abdominal wall.

In another series of experiments Dr. Martin and myself found that water at 65° F. was capable of lowering the bodily heat 3° in thirty minutes, while the use of colder water than this—namely, 52° F.—resulted in death in twelve hours, the post-mortem examination showing intense congestion of the colon, which contained bloody mucus.

The use of water of too high a temperature is also dangerous lest it should produce heat stroke. Of course, no one would use water hot enough to cause local injury. It is necessary to have just enough heat and no more. In the same line of experiments we found that the use of water at 115° F. caused a rise of bodily temperature of nearly 5° in twenty-five minutes, and developed marked symptoms of heat dyspnœa. The temperature which should be employed varies from 101° to 105°, or even as high as 107°, if it is found that the length of tube attached to the fountain syringe results in the cooling of the water as it passes on its way to the bowels.

It was also found that it took four times as long to pass cold water through the ileo-colic valve as to accomplish the same purpose with water at about the bodily temperature. During the time that the bowel is being distended and the ileo-colic valve opened, only the inflow tube should be inserted into the bowel; but as soon as the sudden rumbling or gurgling indicates that the fluid has passed the ileo-colic valve and is circulating in the small intestine, the large outflow tube should be inserted into the rectum to allow the water to escape.

In the earlier stages of cholera, when there is a tendency to abdominal engorgement and to cramps of the bowels and extremities, Winternitz strongly urges the use of the cold and hot bath, and alleges very extraordinary effects from the use of this method. The object to be attained is to produce a peripheral circulation, to awaken the nervous system to the needs of the body, and to arouse the patient's vitality. This is to be accomplished by rubbing the patient rapidly, thoroughly, and with friction with towels dipped in ice-cold water, followed at once as the case is rapidly dried off by a hot sitz-bath or full bath at a temperature of from 110° to 125° F. Every exposed portion of the body should be covered by a blanket and the bath should continue thirty minutes unless excessive effects of the heat are manifested. The skin should also be well rubbed while the patient is under water to bring the blood to the surface. A sharp spray of cold water from a sprinkler directed against the abdomen, if followed at once by a hot bath, is often very efficacious. After the bath the patient is put to bed, wrapped in a hot, dry blanket, and, if necessary, his extremities are well rubbed. At the same time a dose of camphor wine should be given, or at least some alcoholic stimulant.

A method of treatment which has yielded very good results, either alone or when associated with enteroclysis, is hypodermoclysis, a method originally introduced into the treatment of cholera by Oser. Hypodermoclysis consists in the introduction of saline fluid into the subcutaneous tissues, from which it may be absorbed and thereby replace the liquids lost through excessive purging. Hypodermoclysis is carried out by placing in a fountain syringe from twenty to sixty ounces of saline solution of normal strength, seven parts to one thousand, which is warmed to about 102° F. To the tube of the syringe should be attached a thin cannula, which is passed into the subcutaneous tissues of the abdomen and thighs alternately and the liquid allowed to flow through it. The treatment is only slightly painful, if done with gentleness, and the swelling rapidly disappears by absorption alone or by the additional aid of massage. This method has been tried in many cases of hæmorrhage with great success, and was used as long ago as 1866 by Oser in cholera.

The objection to this method is that absorption is often almost entirely stopped by the collapse of the patient. Nevertheless, it can do no harm even in the most advanced cases, and will do good in those not so far advanced in the malady. The total amount injected should not exceed fifty-one ounces in severe cases, or thirty ounces in milder ones. These injections are usually followed by improvement of the pulse and respiration, the cyanosis is decreased, and the secretion of urine re-established. Cantani's conclusions in regard to hypodermoclysis in cholera are as follows:

1. The hypodermic injection is an invaluable therapeutic remedy in the treatment of cholera.

2. In order to be of value it must take place under conditions which render absorption possible. In order to obtain these it should immediately follow a warm mustard bath of about 104° F.

3. The hypodermic injection, as an absolutely harmless remedy, should be put into use as soon as the case of cholera comes to the physician's notice, and methodically repeated every four hours.

4. To further the absorption, it is well to apply the injection at several, or, at least, at two places.

5. The hypodermic injection is not to be regarded as an exclusive remedy for cholera, but it can remove the symptoms accompanying the disturbances in circulation, and following this the imperfect formation of the blood.

Patients treated promptly with the hypodermic injection did not show, even when they died, any cyanosis or asphyxia, and the corpse did not show that general dried condition of the tissues which was found when the hypodermic injection had not been used.

Only exceptionally were unpleasant consequences observed which could be ascribed to the injections. Once paralysis of the heart occurred, probably due, as Cantani believes, to the fact that a small vein was ruptured, so that the salt water entered the blood directly. In rare cases abscesses were formed, but could probably be traced to some lack of cleanliness in the instrument or the fluid.

I have already delayed you too long with this subject, but I may mention, however, that Rieder has found in the present epidemic in Hamburg that intravenous saline injections by the usual methods are much superior to hypodermoclysis.

I may, moreover, refer to Harkins's assertion that blisters over the pneumogastric nerve in the neck give extraordinary results in the treatment of cholera, a statement which has been confirmed by Groneman.

Finally, it may not be out of place for me to express an opinion as to what treatment seems best to me after a careful study of the literature. I can answer this best by saying that if I were attacked by cholera to-day I should use salol by the mouth in full doses, drink water acidulated with hydrochloric or sulphuric acid, and beg my attendants to resort at once to careful and thorough enteroclysis with tannic acid. I should also wish them to employ camphor and ether as diffusible stimulants when needed, and if purging thickened my blood to employ hypodermoclysis of normal salt solution.

222 South Fifteenth Street.

PERSONAL IDENTITY
DETERMINED BY SCARS AND OTHER BODY MARKS.*

By CHARLES R. GREENLEAF, M. D.,
LIEUTENANT-COLONEL AND DEPUTY SURGEON-GENERAL, U. S. ARMY.

The system devised by the writer and introduced into the United States army for the purpose of identifying deserters and those enlisting fraudulently has been described in a paper that was read before the meeting of the International Congress of Hygiene and Demography in London, England, in 1891, and has been published in its transactions.

Briefly described, it consists of a record, on a card bearing the outline of a human male figure, of such marks as are found on the body of the person examined, the anatomical location of these marks being indicated by a "dot" made in a similar place on the figure card. The color of the eye is determined by comparison with a standard of lithographic colors for the two natural colors, blue and brown, which is furnished to each examiner. The cards are sent, upon completion, to the Surgeon-General's Office at the War Department, where they are at once compared with the previously recorded descriptions of men who have left the service. The process of identification is by elimination, the initial point of examination being the color of the eye. The height, which is divided into half-inches and ranges from the minimum of five feet four to six feet two, is next taken, this being followed by a record of tattoo marks, and finally the anatomical regions, for which provision is made on the card commencing with the head. If similarity of record between any two cards indicates identity of a single individual, the fact is duly reported, the suspected party is arrested, and the question of identity is completed by the legal tribunals.

This system was adopted after careful observation and the discussion of various methods that had been suggested for the correction of an evil that has been recognized in all armies, and one which, in our own, was growing to somewhat alarming proportions—viz., the fraudulent re-entry of men into its ranks who had either deserted or had been expelled for cause.

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* Read before the International Congress of Criminal Anthropology at Brussels, by Professor Thomas Wilson, in August, 1892.

The method of identification that received most attention was that of M. Bertillon by measurements, but it was found to be undesirable because, among other things, of the impracticability of securing properly instructed men to use the required instruments of precision, and because of the expense in procuring these instruments.

Recruiting in this country is carried on not alone at fixed stations in cities, but by peripatetic parties in the rural districts as well as at all military posts. The *personnel* of the recruiting service is constantly changing with ever-shifting military exigencies, and neither the opportunity to instruct nor the men to be instructed in anthropometry is obtainable. All recruits are promptly assigned after enlistment to military stations, where their thorough physical examination is made by the officers of the medical department on duty thereat, and the opportunity is thus presented of securing, through responsible and reliable officers, professional accuracy in determining the existence of bodily markings; this being done, moreover, with the least offense to the sensibility of the recruit, who naturally and willingly submits to complete exposure of his person in the anticipated examination of his physical fitness for military duty.

There is, moreover, an ethical objection to making use in our service of the methods for criminal anthropometry "The citizen who desires to enter the army of the United States does so under the belief that he is engaging in an honorable profession, and the code which is presented to him, both in the language of his enlistment contract, in the articles of war, and in the regulations of the army, is drawn with a view to sustain and strengthen this belief. The effect of meeting him at the threshold of his enlistment with a system of identification which is stamped with criminal associations, and presupposes an intent on his part to violate his contract, can not but be fatal to his honorable purpose, and result either in driving him in disgust from the recruiting rendezvous, or in suggesting a future escape from a service into which present necessity has forced him."

The record of work in this direction that has been done in the Surgeon-General's Office covers a period of eighteen months—viz., from January 1, 1891, to July 1, 1892, and the large percentage of successful identifications warrants the belief that all the *recidivists* have been recognized. As previously stated, the scope of this investigation was confined to deserters and those who enlisted fraudulently; but as time rolled on and the results that were obtained proved to be so satisfactory, the War Department extended the field of inquiry to include the identification of all soldiers who, having left the service for any cause other than by the expiration of their legitimate period of enlistment, should attempt to re-enlist without permission of the authorities; and there is reason to believe that the scope of this inquiry will be still further extended to include all soldiers who may re-enlist. At the date of this paper 28,426 outline figure cards have been received, and the number of cases reported as having left the service for cause is 5,073, of whom 3,500 are deserters and 1,573 delinquents from other causes.

Two hundred and ninety-two cases of identity have been reported since the introduction of the outline-card system, and six cases were reported as probably identical. The following is the result of the investigation made in the cases:

a. Identity established and final action reported by military tribunal	173
b. Reported identity and accepted by the War Department	103
c. The suspect deserted before investigation	5
d. Ex-convict; had permission to re-enlist	1
e. Insane soldier; discharged for insanity before investigation	1
f. Doubtful cases, reported as probably identical	6
g. Failures, identity not established by military tribunal.	4
h. Recent cases, investigation pending	5
Total	298

a. This group of cases includes all in which identity was claimed without reservation, because of the similarity of record on the figure cards, and was subsequently established by the proper military tribunals.

b. This group embraces cases in which the evidence of identity was conclusive, but, as the suspects were out of the service, the cases were reported for connection of the enlistment papers. The Adjutant General has accepted the identity in all of the cases.

c. These cases were reported as identical, but no investigation could be made because the man in each case deserted a short period (in some cases a day or two only) before or after identity was reported. After several of this class had thus succeeded in escaping, the telegraph was made use of in ordering arrests. As may be surmised, they occurred only among the earliest cases of identity.

f. These cases were reported as probably identical; although more or less prominent points of resemblance were present, the discrepancies were such that no positive statements were justified, the evidence being submitted for what it was worth. In only one case was the identity absolutely disproved; in four the negative statement of the officer conducting the inquiry was accepted without further inquiry; and in the sixth case inquiry was dropped, the officer charged with it reporting that he had no funds to secure a desired photograph.

g. Two of these cases were submitted with class *a* through error; the card record did not present sufficient evidence to warrant complete identity, and they should have been submitted with class *f;* they were failures: One case was identified by the examining surgeon, but was acquitted by the Court, and one case was a failure, doubtless due to erroneous entry on the card by the recording officer.

The following synopsis of a case is interesting as showing the successful result of persistent efforts to establish a claim to identity against the declared opinions of a military tribunal:

On October 28, 1890, there was submitted to the department a set of figure cards indicating that one George Howie, who was enlisted October 10, 1890, was probably identical with George Harrison, who deserted from the mounted service August 6, 1889. Howie positively denied his identity with the deserter Harrison. His company commander, who conducted the investigation, although admitting that there was "a remarkable similarity in the two outline cards," reported that in his opinion the two persons were not identical, supporting his views with an enumeration of the discrepancies presented by the two cards. Under date of November 12, 1890, reply was made to the indorsement of the company commander, restating the case in full, and recommending that, as the similarity is so remarkable, it can only be explained on the assumption of identity; therefore further steps should be taken to prove it. Under date of November 13th a non-commissioned officer supposed to be acquainted with Harrison was confronted with Howie, but failed to recognize Harrison in him. The papers being again referred to this office, the tracings of the signatures of Howie and Harrison, showing a striking similarity, were added to the evidence, with the request that the correspondence be again referred to Howie's commanding officer, and stating that if identity were to be established on handwriting alone there would be little doubt of it in this case. The commanding officer in reply says: "I agree with the Surgeon-General that there can be but little doubt as to the identity of these (seemingly) two men; but still there is a doubt in my mind as to the identity." He points out the failure of the non-commissioned officer to identify the man, and remarks with reference to the striking similarity in the tattooing that he does not attach as much importance to it as it seems to warrant, from the fact that he has seen on a number of occasions as many as four men "tattooed exactly alike as far as the location and shape of the figure was concerned." He admits that the coincidences are remarkable, and were it not for the fact "that Sergeant Cook failed to identify the man," he would have him arrested and tried for desertion. The papers were again returned to the Adjutant General, meeting the arguments of the company commander, and saying in conclusion that if it were possible to confront Howie with several witnesses who had known Harrison, the establishment of identity was highly probable.

No further action was taken and the papers were filed, with the following remarks by the Adjutant-General's office: "While this (referring to the recommendation of the Surgeon General to confront Howie with several witnesses who had known Harrison) might prove the infallibility of the outline-card system, it also would prove to be rather an expensive experiment. The best evidence that this case is a case of mistaken identity is the fact that the soldier, knowing that he was not only under suspicion but under investigation, has remained with his company and performed his duty up to last muster, February 28, 1891."

This "best evidence" was overthrown when, on April 19, 1891, it was reported that Howie had deserted, after ascertaining that additional evidence had been submitted connecting him with a dishonorable dismissal by sentence of a court-martial in 1887.

Accepting the statement of W. Bertillon in his published addresses that bodily marks "offer a greater guarantee for identification than measurements, and that they would take their place altogether if it were possible to use them as a basis for calculation," I feel justified in asserting that the alternative proposition has been met by the system I have devised, and that it *is* possible to use them as a basis for calculation. Certain it is that the successful pursuit of the military crime of "repeating" is made impossible in the United States army, and that its ranks can in future be preserved from the baneful influence of this depraved class of men.

ANTIPYRINE AS A LOCAL APPLICATION
IN INFLAMMATION OF THE MUCOUS MEMBRANE OF THE UPPER RESPIRATORY TRACT.

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During the fall of 1889 the writer contracted a severe cold as the result of exposure incident to living in a house undergoing repairs. In spite of caution, one cold succeeded another until the resulting laryngo-tracheitis became so severe that talking was exceedingly fatiguing and his voice frequently could scarcely be raised above a whisper. Coughing, especially after meals, was frequently followed by emesis, so that for a considerable time at least one meal a day was vomited almost as soon as swallowed, and considerable loss of flesh resulted.

The use several times a day of a bottle inhaler containing hot water and compound tincture of benzoin gave more or less relief. Inhalations of the spray from an atomizer containing diluted wine of ipecacuanha, a form of treatment suggested by Dr. William Murrell,* of London, invariably relieved the congestion by producing a large amount of secretion from the larynx and trachea, which, being coughed up, relieved the sense of fullness in the throat and chest and rendered talking easier and less fatiguing. However, inhaling the ipecacuanha spray, even when diluted with one to three parts of water, often produced at once reflex vomiting. Indeed, so sensitive was the larynx at this time that even a spray of fluid cosmoline seemed irritating and the impact of powders thrown into the larynx with a powder-blower was absolutely painful. Prolonged inhalation of the ipecacuanha spray also produced nausea which remained for some time after the inhalation was discontinued. In spite of these disadvantages, the spray of diluted wine of ipecacuanha rendered better service than any other remedy that had been used as a local application previous to employing it.

The use of powders by means of the powder-blower was almost out of the question, since, no matter what their composition, the mere impact of them upon the inflamed laryngeal mucous membrane produced pain and was followed by such violent attacks of coughing as quickly expelled the powder from the larynx and rendered any effect from it, except that of an irritant, impossible.

During all this time nasal symptoms gave but little annoyance. A pledget of absorbent cotton saturated with a four-per-cent. solution of cocaine was inserted within each nostril every morning when required, and relieved at once stenosis and checked the free discharge, and this effect of the cocaine could be maintained for several hours by spraying the nose with a four-per-cent. solution of antipyrine. At bed-time the application of cocaine and the use of the antipyrine spray rendered it possible to sleep with the mouth closed until nearly morning. So great indeed was the relief afforded by the use of a four-per-cent. solution of antipyrine as a spray within the nose that it was finally inhaled, being drawn by deep inspirations through the larynx and trachea, and as far into the bronchi as possible. Such inhalations of antipyrine spray were repeated at first from eight to twenty times a day. Within a week or ten days all signs of laryngeal and tracheal disease had disappeared. Since that time the writer has frequently prescribed antipyrine, both alone and in combination with cocaine, menthol, etc., as an analgesic application to the inflamed mucous membrane of the upper respiratory tract, not only when the inflammation was catarrhal, but also when of specific origin, and always with satisfactory results.

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* On Cases treated with Ipecacuanha at the Westminster Hospital, by William Murrell, M. D., F. R. C. P. *Medical Register*, May 5, 1888.

Applied in solution to the mucous membrane of the eye, nose, larynx, or urethra, antipyrine produces at first a smarting sensation and seems to act as an *irritant in proportion to the strength of the solution used.* This smarting sensation, which, however, does not occur in the pharynx even when strong solutions are used, lasts but a few moments and is followed by a feeling of relief and comfort, when the mucous membrane to which it was applied was before inflamed and irritable. The analgesic effect of antipyrine solutions when applied to an inflamed mucous membrane lasts for several hours, and may apparently be maintained indefinitely, if the solution be applied at sufficiently frequent intervals.

Given internally, antipyrine not only exerts a local analgesic effect upon the mucous membrane of the mouth, throat, œsophagus, and stomach if it be inflamed, but it is a powerful antispasmodic, producing this effect, it is said, by diminishing the excito-motor power of the cord. Applied locally, antipyrine solutions seem to also act as antispasmodics, diminishing the reflex cough and asthma of certain nasal affections and the reflex gagging and retching so annoying in certain forms of pharyngitis. Besides, antipyrine is a powerful antiseptic, a five- to ten-per-cent. solution being more active, according to Caravir, than Van Swieten's liquid.

When a four-per-cent. solution of cocaine is applied to the inflamed mucous membrane of the nasal chambers, the sensations from the very first are pleasant. The mucous membrane soon becomes pale and bloodless and shrinks with the so-called erectile tissue beneath to a small bulk. Secretion is checked, but not to an extent to make the nose feel dry and uncomfortable, while increased breathing space and the stimulating effects of the cocaine absorbed produce a feeling of buoyancy. By a single application of a four-per-cent. solution of cocaine to the nasal mucous membrane all the more distressing local symptoms of a " bad cold in the head " may generally be checked in a few moments, but the relief lasts for but half an hour or so, and is followed by increased inflammation and discomfort.

It is, however, far otherwise when a solution of cocaine is applied to the posterior wall of the oro-pharynx. Instantly a feeling of discomfort is produced; the pharynx feels as if suddenly parched by a current of hot, dry air, or as if a ball of absorbent cotton had been left in the pharynx; gagging, retching, and even vomiting occur as the patient vainly strains to dislodge a supposed foreign body. This disagreeable effect of cocaine when applied to the posterior pharyngeal wall seems due to a sudden checking of its secretions, because the same disagreeable sensations occur when a dry powder or a strong astringent solution is applied to the pharyngeal wall. Cocaine and strong astringent solutions may, however, be applied to the tonsils and pillars of the fauces without producing any disagreeable results. Indeed, acute cortical amygdalitis may be treated with most excellent results by carefully painting the tonsils every half-hour with a four-per-cent. solution of cocaine, or twice a day with a solution of nitrate of silver of the strength of one or two drachms to the ounce, care being exercised in either case that none of the solution reaches the posterior pharyngeal wall.

Far different are the sensations produced by the spray from an atomizer filled with a four-per-cent. solution of antipyrine thrown upon the inflamed mucous membrane of the nose. At first it produces a most disagreeable smarting and burning sensation, only partially relieved by frequent sneezing. In most instances the burning and smarting sensations soon pass away; and if the interior of the nose is now inspected, it will be found to present somewhat the same appearance as if a weak solution of cocaine had been applied. The mucous membrane and turbinated tissues are paler and somewhat shrunken. However, there is no local anæsthesia, but *analgesia*, nearly all of the discomfort arising from the inflammation having subsided with the disappearance of the primary irritating effects of the antipyrine solution; and *analgesia* thus produced will probably last for several hours, and may apparently be maintained indefinitely during the presence of inflammation by spraying the interior of the nose with a weak solution of antipyrine at sufficiently frequent intervals.

As a rule, four-per-cent. solutions of antipyrine are too concentrated for use upon an inflamed Schneiderian membrane without the previous application of cocaine. In most instances the primary irritation produced by spraying the nasal chambers with solutions of antipyrine of this strength subsides very slowly, and is not followed by any analgesia whatever. In such cases it acts both first and last as an *irritant.* Especially is this true in cases in which the neurotic element predominates, as in hay fever, nasal hydrorrhœa, and in cases resembling hay fever occurring during the winter-time. In some of these cases solutions of antipyrine not stronger than one per cent. are irritants, and their use by means of an atomizer is followed by increased inflammation. The primary irritation produced by the local use of antipyrine is always severe and prolonged *just in proportion to the irritability of the mucous membrane to which it is applied;* and a solution so concentrated that it will produce more than momentary discomfort, followed almost immediately by a feeling of ease and relief, *should not be applied to the inflamed mucous membrane of either the nose or larynx.* Solutions of from one to three per cent. generally give good results when used with an atomizer inside the nose, and solutions of from one to three per cent. applied to the inflamed conjunctiva and the mucous membrane of the urethra and bladder are, so far as the writer's very limited experience goes, followed by sensations of ease and comfort.

When applied to an inflamed posterior pharyngeal wall powdered antipyrine, or a spray of a concentrated solution of it, produces no primary irritation, but at once a feeling of relief and comfort. After several applications the reddened mucous membrane becomes distinctly lighter in color, and in some instances assumes an almost normal appearance.

Applied to the larynx, a four-per-cent. solution of cocaine produces no disagreeable sensations, unless some of the fluid reaches the pharyngeal wall. The mucous membrane is anæsthetized and becomes pale and bloodless; but so transitory is this effect that the secretions seem in no wise diminished, but rather increased in amount, as the effects of the cocaine last but a few moments and are followed by a certain amount of reaction. When powdered antipyrine or a strong solution of the drug is applied to the laryngeal mucous membrane, it produces a sharp, burning sensation, which, however, is but momentary, and is followed by blanching of the mucous membrane and diminution of its secretions. If the voice was partially husky from inflammation, it improves in quality. If talking was previously painful, a single application of powdered antipyrine produces analgesia, so that the use of the voice is not so painful. The analgesia is not generally complete, because the disease in such cases ordinarily involves parts deeper than the mucous membrane, and a sufficient amount of the drug is not absorbed to produce constitutional effects.

The following cases will illustrate the therapeutic applications of the drug:

Case I. *Acute Coryza with Catarrhal Conjunctivitis.*—A married lady, thirty years of age, "caught cold the previous evening by sitting in a draught." Both nasal chambers were occluded and a profuse nasal discharge required an almost constant use of the handkerchief. The eyes were suffused and congested, the papular conjunctiva intensely red, and at the outer portion of the right upper lid were a few swollen papillæ, which produced the sensation of a foreign body and greatly increased the patient's discomfort. She stated that she could not use her eyes without pain.

Treatment consisted in washing the nasal mucous membrane with a spray from an atomizer containing an alkaline antiseptic solution, large pledgets of absorbent cotton saturated with a four-per-cent. solution of cocaine being then placed between the lower turbinated bodies and the sæptum, and a drop of a two-per-cent. solution of antipyrine was instilled into each eye. After sufficient time had elapsed for the cocaine to produce its characteristic effects, the pledgets of absorbent cotton were withdrawn and the interior of the nose sprayed with a four-per-cent. solution of antipyrine, and afterward with a three-per-cent. solution of menthol in fluid cosmoline. As the result of these applications the patient expressed herself as feeling entirely comfortable; she could breathe through her nose, and its discharge was checked; her headache was gone. Her eyes, too, had altered their appearance; they were no longer suffused nor was the ocular conjunctiva injected. The papular conjunctiva, however, was still redder than normal, and another drop or two of the two-per-cent. solution of antipyrine was instilled into the eyes. It did not produce the same amount of smarting as did the first drops. She was directed to take powders containing one third of a grain of calomel and five grains of bicarbonate of sodium at intervals of an hour until six powders had been taken, and to use the two-per-cent. antipyrine drops; and also an atomizer containing a three-per-cent. solution of antipyrine every two hours.

The next morning she reported that the calomel powders had produced one or two loose evacuations, that her eyes had ceased to annoy her, and that she was, in fact, free from all symptoms of her cold. However, she was directed to continue the treatment for one day longer.

Case II. *Acute Follicular Amygdalitis.*—A boy, fourteen years of age, who stated that he had caught cold the night before, since which his throat had been so sore that swallowing was painful. Upon inspection, the entire oro-pharynx appeared red and congested. The tonsils were swollen and covered by an exudate from the inflamed follicles. The breath was somewhat fœtid. There was some elevation of temperature. An alkaline antiseptic spray was thrown through the nose into the naso-pharynx. This brought down much mucus from above the tonsils and afforded decided relief. As the nasal mucous membrane was somewhat inflamed, it was protected by a layer of fluid cosmoline thrown into the nose as a spray. The tonsils were next washed with an alkaline antiseptic spray, and as much as possible of the exudate removed by means of a pledget of absorbent cotton wrapped about a probe and dipped into a solution of peroxide of hydrogen. By means of the powder-blower the tonsils and oro-pharynx were then covered with powdered antipyrine. As soon as the powder had had time to dissolve in the secretions of the parts, the patient expressed himself as feeling much better. He was directed to take at once a wineglassful of Hunyadi water as a cathartic, and to have a friend blow into his pharynx and upon his tonsils a grain and a half of antipyrine every two hours.

As the result of this treatment, the patient experienced at once a great deal of relief, and the fauces presented their normal appearance on the third day.

Case III. *Hypertrophic Rhinitis and Chronic Pharyngitis.*—This patient, a commercial traveler, came to me for treatment on July 7, 1891. I had made an examination of his nose and throat some months before that date. He was one of the most robust men that I ever met. Not noticeably fat, his weight must have been about three hundred pounds; yet he stated that his throat had been for years a continual source of discomfort and anxiety to him, and that he had given up an advantageous position in a Western city because the climate seemed to make his throat worse. In fact, while there during one of the numerous acute exacerbations of his ailment, the symptoms became so alarming that he thought "he was certainly going to choke to death," and was sure that he would "never survive such another attack." He stated, furthermore, that his throat was almost raw from continual hawking, and that he had been to several specialists without permanent relief. He was a man of most excellent habits, and used neither tobacco nor liquor.

His nasal chambers presented the ordinary appearance seen in chronic rhinitis. There was a small ecchondrosis in the left nasal chamber and some hypertrophy of the turbinated bodies, but not enough to produce stenosis or suggest the urgency of operative interference, although the condition of the nose had doubtless much to do with his distressing pharyngeal symptoms. His entire fauces were intensely red and congested and so exquisitely irritable that even the tongue depressor had to be used with the utmost care to prevent retching and vomiting. It was impossible at his first visit to use either the laryngoscope or rhinoscope, as the mere suggestion of putting a mirror into his fauces almost produced emesis.

Office treatment consisted in washing the nasal chambers with the spray from an atomizer containing an alkaline, antiseptic, sedative solution. Secretion in the nose and naso-pharynx was by no means abundant, and the spray brought down but a moderate amount of mucus, which, with much gagging and retching, was finally expectorated. The clean nasal and naso-pharyngeal mucous membrane was then sprayed with fluid alboline, and a small amount of finely powdered calomel was distributed over it with the powder-blower. The fauces were several times sprayed with a twenty-per-cent. solution of antipyrine, and the patient was instructed to inhale as much of the spray as possible. This was all that was done at the first visit, but my patient left me feeling much more comfortable, with his pharynx distinctly lighter in color, and for the next four or five hours there was but little hawking and gagging. At his second or third visit it was possible to use both the laryngoscope and rhinoscope, and make applications to the congested mucous membrane of the pharyngeal vault and larynx. He was instructed to use at home several times a day an atomizer containing a four-per-cent. solution of antipyrine, directing the spray into his pharynx. He also took, at first three times a day and afterward only at bed time, eight grains of the bromide of sodium and three grains of the iodide of sodium. From July 7 to July 25, 1891, he made eight visits to my office, at which date his throat gave him so little inconvenience that he ceased his visits. I saw him next on September 24th. The pharynx presented an entirely normal appearance, but was still somewhat sensitive. He was directed to resume the use of the antipyrine spray, and occasionally take at bed-time a mixture containing bromide of sodium.

Case IV. *Hypertrophic Rhinitis and Asthma.*—Mr. H., electrician, twenty-one years of age, came to my office on April 10, 1892. He stated that he had had attacks of asthma ever since he could remember, but that the attacks varied greatly in frequency, occurring sometimes for weeks as often as every night, while sometimes for months he was entirely free from them.

Physical examination of his chest yielded a negative result. His nose was partially occluded by an anterior and posterior hypertrophy and also by a small exostosis. Respiration was, however, nasal, except during attacks of acute coryza. The mucous membrane of the pharynx, larynx, and trachea, as far as it could be seen by means of the laryngoscope, was reddened and congested. There was, however, but little cough and expectoration, except immediately after an attack of asthma.

The anterior hypertrophy was burned by means of the galvano-cautery, the exostosis removed with the electric drill, and the posterior hypertrophies were removed by means of the snare. The nose was gotten into a condition resembling health as rapidly as possible under the impression that the attacks of asthma were largely reflex and due to nasal disease. That this was the case seemed borne out by the fact that each operation upon the nose was followed by an attack of asthma, which, however, was controlled by inhaling the spray from an atomizer containing a four-per-cent. solution of antipyrine.

For the past three or four months he has had no signs of asthma, although he has caught cold several times. He continues using occasionally an atomizer containing a four-per cent. solution of antipyrine and calls at my office once a week for local treatment, the nose and throat having assumed almost a normal appearance.

Case V. *Chronic Laryngitis with Bronchitis.*—A man about thirty years of age, married, and a professional singer, inasmuch as he is a member of a church choir, and obtains a considerable income from singing at social gatherings, weddings, funerals, etc. His first visit to my office was made in June, 1890. He stated at that time that he had suffered from a severe cough for some months and had lost in weight; that expectoration was scanty during the day, but that each morning expectoration was profuse, and that he felt oppressed mornings and unable to work until repeated coughing had dislodged a large quantity of mucus. His voice had become treacherous and frequently showed signs of failing him while singing, so that singing was much more fatiguing than formerly. It was often very difficult, sometimes impossible, to sustain his notes. He had lost the power to sound one or more of his high notes at all, and the character of his voice had changed and was losing its purity of tone. One object in coming to see me was to ask advice as to the advisability of giving up singing entirely.

As it was a source of considerable revenue to him, I advised him not to do so, but to use his voice as little as he could aside from filling all his professional engagements. Constitutional treatment consisted in the administration of cod-liver oil and tonics, while outdoor exercise was also advised. He inhaled each morning, when necessary, the spray from an atomizer containing equal parts of wine of ipecacuanha and water, and continued the inhalations until the sense of oppression in his chest had been relieved by the profuse expectoration which these inhalations produced. Several times a day, and more especially at bed-time, he inhaled the spray from an atomizer containing a four-per-cent. solution of antipyrine. Twice or thrice a week a powder consisting of equal parts of powdered sulphate of zinc and starch was thrown into his larynx, and as far as possible into his trachea, by using the powder-blower at my office during forced inspiration. Under this treatment his general health rapidly improved and his weight increased from a hundred and thirty to a hundred and fifty-two pounds. Expectoration greatly decreased in amount. His sleep was no longer disturbed by coughing, nor was it necessary to use the spray of wine of ipecacuanha in order to relieve congestion of the bronchial tubes and dislodge the amount of mucus that had accumulated over night, as the antipyrine spray not only relieved the congestion of the parts, but also controlled excessive excretion. The voice gradually improved in quality, and the power to sound his high notes which had been "lost" was regained, and also the ability to sustain his notes while singing. During the first month of treatment he was in the habit of taking a teaspoonful of the fluid extract of coca in a glass of sherry as a stimulant a few moments before singing, but ultimately he came to the conclusion that he sang better without it, and at that time he stated to me that he did not think that he had ever in his life before been in better health or voice.

Previous to January, 1891, I used antipyrine locally in the pharynx only as a spray and in dilute solutions. At this time, however, my attention was attracted by a paper by Dr. E. Coupard and Dr. E. Saint-Hilaire, "De quelques usages de l'antipyrine dans les affections de la gorge et du larynx."* In this paper the authors advise the application of concentrated solutions of antipyrine (four to sixteen grammes of antipyrine to ten grammes of water) and state that solutions of antipyrine of this strength are caustic and produce a severe burning sensation.† Numerous cases are cited exhibiting the beneficial effects of these applications not only in acute and chronic laryngitis, but also in tubercular laryngitis, even in advanced stages of the disease. Since reading this valuable and interesting paper I have used solutions of antipyrine, varying in concentration from twenty-five per cent. to saturation, in various inflammatory affections of the laryngeal mucous membrane, sometimes making my applications by means of the spray from an atomizer, sometimes by means of a pledget of absorbent cotton wrapped about a probe and passed, dripping with the solution, into the supraglottic portion of the larynx. Sometimes I have thrown the powdered drug with a powder-blower into the larynx and trachea.

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* *Revue de laryngologie, d'otologie et de rhinologie*, January 15, 1891.

† À ce titre l'antipyrine est caustique et produit une sensation de brûlure très vive, mais qui disparaît au bout de quelques secondes.

It is well to begin treatment by using a twenty-five-per-cent. solution within the larynx by means of a cotton-holder or a brush. If this be well borne, a fifty-per-cent. solution should be used the next day, and the concentration of the solution used should be still further increased at each daily visit of the patient, until the strongest solution is employed, whose use is followed by only momentary smarting, giving place almost immediately to a feeling of ease and comfort. In many cases finely powdered antipyrine gently thrown into the larynx with a powder-blower and, if necessary, drawn into the trachea and bronchial tubes by using the powder-blower during deep inspiration, gives better results than can be obtained by applying a solution of antipyrine inside the larynx by means of a cotton-holder or a brush.

It is of the greatest importance that all powders should be thrown into the larynx with the utmost *gentleness*, for it must be borne in mind that each little particle of the powder strikes the inflamed mucous membrane of the larynx a blow, light or severe, in proportion to the amount of force employed in compressing the rubber bulb of the powder-blower. It seems scarcely necessary to add that the powder used should be impalpable, yet inattention to these details frequently increases laryngeal inflammation to an extent that can not be remedied by the medicinal properties of the powder employed.

When thrown upon the inflamed mucous membrane of the larynx, antipyrine produces a burning sensation, sharp in proportion to the *amount* of the powder used. This burning sensation, however, lasts but a few seconds, and is quickly followed by a sense of comfort. If the parts are now inspected it will be found that their redness and congestion have in a great measure disappeared. More antipyrine may now be thrown upon the laryngeal mucous membrane if it is thought necessary. Generally, when a large amount of antipyrine is thrown into an exceedingly sensitive larynx, it produces the same effect as any other powder—violent cough, and sometimes spasm of the glottis of short duration, gagging, and even vomiting. Under such circumstances the powder is expelled before it has had time to dissolve in the secretions and produce an analgesic effect. It is well, therefore, where the larynx is exceedingly sensitive, to at first throw into it only a small quantity of powdered antipyrine with extreme gentleness, and, after an interval, a larger quantity.

Case VI.—A recent graduate of the medical department of the University of Pennsylvania, pale, thin, overworked, and with a family history of tuberculosis, had suffered with hypertrophic rhinitis and chronic pharyngitis for years. On August 21, 1891, he contracted a severe cold, which remained untreated for over two weeks, at the expiration of which time he came to my office. In addition to the ordinary symptoms resulting from severe coryza, he complained of dysphagia. Not only was swallowing difficult and painful, but two or three mouthfuls of water swallowed rapidly would often produce vomiting. His voice was toneless and almost whispering. Talking for a few moments was exceedingly fatiguing and caused sharp pain shooting from the larynx up to the posterior pharyngeal wall, while at the same time the eyes became suffused and the voice husky. He stated that during the previous two weeks he had lost sixteen pounds in weight. He was exceedingly alarmed as to his condition, and said: "If this is phthisis I should like to know it." Taken in connection with his general appearance and family history, the existence of such a cause for the condition of affairs was by no means improbable.

The mucous membrane of the soft palate was anæmic, especially at the junction with the hard palate, but not of the ashy gray color peculiar to phthisis. The oro-pharynx was moderately congested and had upon it several patches of swollen and inflamed papillæ. Both arytænoids were swollen and red, but did not present the œdematous appearance characteristic of laryngeal phthisis. The supraglottic mucous membrane was reddened and the cords moderately congested. The left cord seemed to move more sluggishly than the right. At the first visit I had not sufficient time at my disposal to undertake a careful examination of his chest. Afterward his improvement was so rapid that the matter was neglected.

It will scarcely advance the purpose of this paper to describe the condition of the parts above the oro-pharynx or dwell upon the conditional treatment. During his first visit cocaine, antipyrine, and menthol were applied to the nasal mucous membrane in the manner already described. The swollen and inflamed follicles on the pharyngeal wall were touched with a solution of nitrate of silver, one drachm to the ounce of water, and the pharyngeal wall covered with antipyrine by means of the powder-blower. Antipyrine also was thrown gently upon the supraglottic laryngeal mucous membrane. This treatment, so far as the larynx and pharynx were concerned, was repeated daily during the first week, every other day during the second week, and at longer intervals during the third week. Referring to the notes of his case, which the doctor kindly placed at my disposal, I find the first application of antipyrine gave complete relief as to the dysphagia, and rendered talking much easier. This relief lasted for about six hours, but the benefit from each subsequent application persisted for a longer period. At the end of the first week his dysphagia and dysphonia had disappeared entirely, and hence the visits to my office at less frequent intervals during the second and third weeks. During the first three weeks he was under observation his general health steadily improved and he had regained six pounds of the sixteen lost during the first two weeks of his illness. He regained his usual weight toward the end of September and remained in good health during the winter, using, however, occasionally the atomizer containing a four-per-cent. solution of antipyrine which I prescribed for use at home when I first saw him.

This summer (1892) he had an attack of hay fever, to which he is subject each summer. This he stated to me was greatly alleviated by the frequent use of an atomizer containing a two-per-cent. solution of antipyrine—a fact of considerable interest, because my success in the treatment of this disease by solutions of antipyrine had not been so great as I hoped it might have been, probably because of the too great concentration of the solutions I formerly prescribed, or because a solution so dilute as to cause little primary irritation (three to ten grains to the ounce) contains too little antipyrine to be of much value as an analgesic unless used at very frequent intervals. However, one case now under my care reports that she received great benefit by spraying her nose every hour or two with a one-per-cent. solution.

Case VII.—Mrs. D., aged thirty-two years, a widow, consulted me for the first time on June 28, 1892. She stated that she had previously been treated by a specialist for catarrh of the nose and throat, and also for a medium-sized goître which occupied the left side of her neck. That she had been benefited by his treatment, but that she was still subject to "choking spells" that greatly alarmed her and her friends. The death of her husband had thrown upon her hands the management of a large hotel of which he had been the lessee, and since she had taken charge of the hotel her "choking spells" had become so frequent and severe that she had been advised to give up her business and retire to some mountain resort for the summer as the only means of regaining her health. This she stated she could only do by subjecting herself to great pecuniary loss.

As the hotel was located on the sea-shore, the cause of her impaired health was easy to understand; such cases invariably get worse at the sea-shore.

The mucous membrane of the nose and naso pharynx was somewhat hypertrophied and congested; the naso-pharynx contained a small amount of partially inspissated mucus. The mucous membrane of the larynx was red and swollen. She said that she had a short cough, but that her expectoration was scanty. It was concluded that the "choking spells" she described were probably due, in part at least, to pressure on the left recurrent laryngeal nerve by the bronchocele. She stated that it had recently increased in size.

Powders containing twenty grains of the bromide of sodium, which I prescribed, were only used a few times, as complete relief was obtained from antipyrine used in the following manner: Two atomizers were filled, the first with a two-per-cent. solution, and the second with a four-per-cent. solution of antipyrine. The spray from the first was thrown through the nose into the pharynx night and morning; the spray from the second was inhaled five or six times a day.

I saw her on August 6th for the third time. She reported that the relief from the use of the antipyrine spray was almost immediate; that her catarrh now no longer annoyed her and that she had had no "choking spells" for some weeks, and that the goître had *decreased in size*.

Case VIII.—Mr. H., mechanical engineer, thirty years of age, first came to my office February 15, 1892. He stated that when a lad of thirteen years of age he had received treatment in Vienna from Professor Czermak for chronic laryngitis, and had afterward been treated in Buda Pesth by Professor Lory for the same affection. Although he had never completely recovered from his laryngitis, his health had been fairly good until during the last three or four months. That about the 1st of January, 1892, his strength and weight rapidly decreased, and that during the past two weeks he had lost ten pounds in weight. He was hoarse, had almost constant pain through his larynx, and often through the upper part of his chest. That his voice, always feeble and easily fatigued, was now, after a few moments' conversation, scarcely more than a whisper. Swallowing of either fluids or solids was painful. He had shortness of breath, and recently night sweats.

Although he had suffered ever since he could remember from chronic catarrh, not only of the larynx but of the nose and throat also, his symptoms had lately assumed such an alarming character that he, his family and friends, had all come to the conclusion that he had "commencing consumption" and that his days were numbered. Indeed, this diagnosis had been confirmed at one of the larger hospitals of our city which he had visited February 14th. He stated that the prognosis in his case as related to him there was so gloomy that the next day he applied for treatment at the Nose, Throat, and Ear Department of the Northern Dispensary.

He was examined during my absence by one of my assistants, and, looking over this gentleman's shoulder as he entered a description of his case on the books of the department, he said that his heart sank within him when he noted that a somewhat similar diagnosis had been made to that at the other institution.

The condition of his nose and pharynx need not detain us, as it is not altogether germane to the subject of this paper. The larynx presented the appearance detailed in Case VI, except that the cords could be maintained in contact for only a shorter interval, the left cord being much weaker than the right and the swelling and inflammation of the structures covering the arytænoids was much greater. Physical exploration of the chest elicited all the signs of commencing consolidation of the left apex, where a few mucous râles were also heard.

The treatment adopted in this case was similar to that of Case VI. The condition of the nose and pharynx was improved as rapidly as possible by suitable measures. Daily applications of antipyrine were made to his larynx. More and more concentrated solutions were applied to the larynx at each daily visit, until finally the powdered drug itself was used, being thrown into the larynx and trachea during deep inspiration. At home he used every morning a bottle inhaler containing hot water and compound tincture of benzoin, which enabled him to easily rid himself of what mucus had accumulated in the bronchial tubes over night, but the use of the inhaler was not required for this purpose longer than during the first two or three weeks. From the first he inhaled several times a day the spray from an atomizer containing a four-per-cent. solution of antipyrine. He also took with each meal a small dose of maltine, cod-liver oil, or Trommer's extract of malt.

On the fourth of his daily visits he reported that he had gained four pounds in weight, that he had been for the past two days entirely free from pain in his throat and chest, and had had no night sweats. His weight when I first saw him was one hundred and thirty-nine pounds. One week afterward he weighed one hundred and forty-five pounds. At the end of the third week of treatment he weighed one hundred and fifty pounds, which was a few pounds heavier than he had ever in his life weighed before. After this time there was no further increase in weight.

With the increase in weight there was a corresponding increase in strength. The chest symptoms, both subjective and objective, rapidly disappeared, while the voice assumed a character suited to a healthy man of his strength and weight, yet the condition of the laryngeal mucous membrane as seen in the laryngeal mirror was by no means normal. About this time he became exceedingly irregular in his attendance, and excused himself by remarking that he felt better than he ever had in his life before. I saw him last on August 10, 1892, when he came to see me because he had caught cold and had a slight attack of acute laryngitis.

He informed me that he had for some time been doing night work in an artificial ice factory, attending to two large boilers without the aid of a fireman, and that his work required him to frequently leave the hot boiler-room, when overheated, and remain a short time in a room where the temperature was below the freezing point, but that, in spite of this employment, his general health had remained good.

I have not entered into the minuter details of some of the above cited cases as thoroughly as if greater space for the purposes of this article had been at my disposal. I have also been somewhat at a loss to determine which of my cases to report as best illustrating one or more of the properties of antipyrine when used as a local application in the treatment of diseases of the upper respiratory tract.

Used locally, antipyrine has afforded great relief in several cases of advanced tubercular laryngitis and also in several cases of syphilitic pharyngitis and laryngitis, but it seems needless to detail them. In nearly all instances of inflammation of the mucous membrane of the upper respiratory tract for which I have prescribed antipyrine during the past three years it has yielded good results as a local analgesic and antispasmodic whose effects could be maintained for a long time if applied at sufficiently frequent intervals. Not only this, but its continued use seemed to be followed by permanently beneficial results.

41 SOUTH NINETEENTH STREET.

THE CLINICAL SIGNS AND LESIONS OF INFANTILE DIARRHŒA.*

By HENRY DWIGHT CHAPIN, M. D.,
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IN considering the subject of infantile diarrhœa, a study of the location and character of the lesions as interpreted by clinical signs, and particularly by the nature of the discharges, is of great importance with reference to prognosis and treatment. Where irritation or inflammation exists in the two extremities of the alimentary tract—namely, the stomach and lower segment of the large intestine—the discharges will pretty surely locate for us the seat of trouble. In a large part of the intermediate tract, however, it is oftentimes impossible to judge accurately either the exact location or the extent of the lesion by the character of the stools. Preconceived notions of disease are often violently modified at the autopsy table, and we are sometimes surprised, not to say chagrined, to find hardly any lesion in a case of profuse and inveterate diarrhœa that has resisted our most skillful treatment; while, again, a sudden and unexpected death during a comparatively mild diarrhœa may exhibit the presence of deep ulcerations through the lower part of the ileum and colon. An elaborate classification of the lesions of infantile diarrhœa that can only be made on a post-mortem examination will, of course, be of no clinical value. A study of the stools, together with a careful collaboration of all the rational symptoms, will usually afford us a simple working classification that will be valuable in treatment, if not always unerring in prognosis. The vast majority of our cases may be included under one of three heads—the diarrhœa of acute indigestion, the diarrhœa of inflammation, and the diarrhœa of chronic indigestion or atrophy.

In acute indigestion the stools at first consist of thin fæcal matter, more or less profuse, soon becoming thin and watery from active peristalsis and hypersecretion of the intestinal glands. Undigested particles, consisting principally of small lumps of fat and coagulated casein, are pretty constantly noted. If such undigested masses continue to be passed, more or less thin mucus will soon be present in the stools, which at times are greenish in color. In hot weather a very moderate degree of intestinal indigestion may be accompanied by yellow, watery discharges from the depressing action of the heat upon the splanchnic nerve. If starchy food has been given, either alone or mixed with milk, it may present an unchanged appearance. In cases in which the indigestion is very acute there is some rise of temperature at the beginning of the attack, which subsides, however, with the diminution of the first irritation. The discharges accompanying the diarrhœa of acute indigestion may be briefly summed up as consisting of fermenting and changed nutriment, with the products of an irritated mucous membrane. Exactly where an overstrained physiological action becomes pathological is as hard to determine in the gastro-intestinal tract as in other structures of the body. There is a point where intestinal irritation, if it is unchecked, becomes intestinal inflammation, but it is impossible to make an exact line of demarkation between these two conditions. When an inflammatory action has become well started, the temperature will remain elevated. The stools may become more frequent, and their character at the beginning of the inflammation will depend largely upon the nature of the food. As milk is usually the nourishment given, small white masses of fat and lumpy curds of casein are often noted. These partly digested substances may be mixed with altered epithelial cells, forming putty-like masses. If cow's milk, particularly in too concentrated form, continues to be administered, such masses will be passed during the course of the disease. When milk is stopped, or much diluted, and meat broths given, the stools may be watery and dark-colored, containing deposits of very offensive feculent matter. As the diarrhœa progresses, mucus, in various conditions and consistence, becomes an important element in the discharges. Professor Nothnagel states that when the jejunum and ileum are affected by catarrh, mucus can not be detected by an ordinary inspection of the stools, but that islets of mucus are distinctly visible when a specimen is placed under the microscope between two thin plates of glass. If the mucus is colored with bile pigment, it forms a more visible indication of jejunal and ileal catarrh. In the vast majority of cases the lesion, as revealed by autopsy, involves the ileum and colon, so that the mucus comes from some portion of this tract, its condition depending upon the part that has sustained the brunt of the inflammation. When the ileum and upper part of the colon are particularly involved, the mucus will probably be bile-stained and mixed with undigested masses of food and fæces. The degree of admixture of mucus with the intestinal *débris* will afford a tolerably accurate idea of the part of the colon most affected. Thus, the closer the mixture of mucus with the fæcal masses, the nearer the lesion will be to the cæcum. When the lower colon, on the contrary, is most involved, the mucus will be more distinct, passing in glairy masses, or sometimes in pulpy, shreddy particles, presenting somewhat the appearance of false membrane. Blood may be present in the stools, mixed in streaks with the mucus and fæcal matter if it comes from the upper colon or ileum, but redder and more distinct from the lower colon and rectum. It may also be present in dark, sticky masses when coming from the upper part of the bowel. The color of the stools varies according to the amount of their prevailing ingredients, and also to the stage of fermentation that they have reached.

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* Read before the Section in Pædiatrics of the New York Academy of Medicine.

Thus white, dryish, putty-like stools consist principally of fermenting fat; brownish stools, of albuminous matter from animal broths, frequently very offensive from advanced decomposition, also due to discolored blood from the upper intestinal tract, or the administration of drugs, particularly bismuth and iron. Red stools are due to blood, as already noted, from the lower bowel. The yellowish, watery stools are simply the ordinary fæcal discharges much diluted by the glandular secretions of the intestine. The causation of green stools so often seen, particularly in the earlier stages of diarrhœa, has been the subject of much controversy. The view that bilirubin is changed into biliverdin through the influence of an acid fermentation has been disputed by Pfeiffer, who maintains that green stools are induced by an alkalinity of the small intestine. The green color has also been attributed to the action of microbes. It has seemed to me that, however caused, the green stools are clinically noticed in connection with evidences of much irritation of the bowel with active fermentation of its contents. The bulk and character of the stools vary according to the frequency of their passage. While something may be approximately learned from a careful study of the nature of the stools with reference to the part of the bowel most involved, the information to be thus gained as applied to the extent and gravity of the lesion is most unsatisfactory, according to my observation. This is especially true where ulcers are present in the intestinal tract. Eustace Smith states that when the stools show a shreddy deposit, mixed with small black clots of blood, ulceration of the bowels may be confidently predicated, even although no tenderness of the abdomen can be detected. This may occasionally be true, but, as a rule, I have been unable to verify it. I have been frequently surprised to find ulcers on autopsy that were unsuspected in life. Thus a large, flabby baby of seven months was admitted to the babies' wards of the Post-graduate Hospital, with a history of vomiting and frequent green stools. She had been fed for five months on cow's milk. A moderate diarrhœa continued for ten days without any unusual features, the temperature not rising above 100° F. She exhibited a continuous failure of vitality, however, in spite of taking and apparently digesting her food fairly well. She died suddenly and the autopsy revealed numerous ulcers through the lower two feet of the ileum, while the colon was peppered with ulcers throughout its whole length, some extending through the muscular coat, but no perforations. No other lesion was found, except a passive congestion of both lungs. Ulcers in the intestinal tract may occasionally be tubercular. A baby of ten months was admitted to the babies' wards with diarrhœa and a history of having coughed for five months. She had from three to ten loose yellowish and greenish stools a day, and a temperature varying from 101° F. to 104·4° F. At the autopsy a tubercular ulcer was found a little above the ileo cæcal valve. The bronchial glands were enlarged and cheesy. The lungs and spleen were tubercular. In cases where a rapid loss of vitality seems out of proportion to the number and character of the stools I suspect more or less extensive ulceration. Also, where there is any evidence of tubercular infection, a diarrhœa accompanied by prostration may be an evidence of tubercular ulceration of the bowel. The most striking instance of an opposite condition to that often presented by ulceration is cholera infantum, where the profuse and violent discharges are with difficulty connected by the observer with the mild lesions so often seen after death. The radical difference between this and all other forms of diarrhœa leads us to predicate the existence of a specific germ. The attack may be preceded for several days by intestinal indigestion with average diarrhœal stools, when choleriform discharges suddenly ensue. The profuse, colorless watery stools soak through the napkin, scarcely leaving a trace, except a slight staining in the saturated cloth, together with a peculiar musty smell. Incessant vomiting quickly ensues, even water not being tolerated by the stomach. The child is quickly drained as if by a hæmorrhage, by the profuse serous discharges which come from the blood-vessels by a paralysis of their vaso-motor nerves. The sphincter may become so relaxed that the discharges ooze out at short intervals of time. In a few hours the tissues are so shrunken that the infant can hardly be recognized. The skin becomes cold and clammy, and death is apt to be preceded by convulsions or coma. This form of diarrhœa is fortunately rare, forming a very small proportion of the cases seen every summer.

The most inveterate form of infantile diarrhœa and difficult to treat successfully is that seen in connection with chronic indigestion and atrophy. These infants have often a poor heredity, or have been subjected to vicious methods of feeding, and usually to a bad environment. They may be affected with general tuberculosis, without, however, intestinal lesion, syphilis, or rickets. In many cases none of these taints are manifest, but the infant steadily fails in spite of the most careful and scientific feeding. These cases are especially seen in foundling asylums and infant hospitals, and are the bane of the attending physicians. The stools may not be numerous, and consist largely of fermenting food, which is usually offensive. There is an improvement from time to time, and the infant takes food with avidity, as the stomach is not much affected. It seems utterly unable, however, to thoroughly digest and assimilate its nourishment, and soon relapses into a worse condition than before. Putty-like stools, containing masses of fermenting fat, may alternate with green mucous or brownish, offensive discharges. Occasionally one or two large, watery stools will suddenly ensue, which is a bad sign. The stools become thinner and more frequent in number as the disease approaches a fatal ending. At the same time assimilation becomes more and more defective and emaciation extreme, death usually taking place from exhaustion. During much of the course of the disease the temperature is found to be subnormal. Autopsies in these cases, instead of revealing evidences of marked inflammation, show rather a pale, flabby condition of the intestinal mucous membrane. Under the microscope there is seen a fine granular or colloid degeneration of the epithelial structures with some swelling of the lymphoid bodies. The underlying trouble in these cases is an essentially defective vitality that may be hereditary or acquired, or both. When the vital powers are low, the organs of digestion and assimilation are the first to suffer in function from feeble innervation. Hence the uselessness of astringent, or antiseptic, or any other kind of drugs in these cases. While being industriously plied with various preparations of this kind, if the feeble infant could express an opinion, one could fancy it paraphrasing a couplet from Tennyson:

"'Tis life whereof our nerves are scant,
. . . . . .
More life, and fuller, that we want."

The nervous symptoms exhibited in the various forms of infantile diarrhœa form an interesting subject of study. There may be great restlessness, mild or severe convulsions, or coma. As the case progresses, there is a very evident crippling of the functions of the brain, that has been included under the somewhat unsatisfactory term spurious hydrocephalus. There may be convulsions ending in stupor, and, finally, profound coma, if the case is fatal. The cause of this disturbance of the cerebral functions appears to be of a composite character. Thrombosis of the cerebral sinuses, due to a sluggish movement of the blood from feeble heart action, is not shown by autopsy to exist as frequently as was supposed. There is generally, however, more or less passive congestion in the cerebral veins, and, if shrinking of the brain tissue has taken place, some serous effusion over the surface of the convolutions. Although the brain is always soft and watery during infancy, it appears peculiarly so after death from diarrhœa. Doubtless the mere fact of impoverished blood passing sluggishly through the brain will account for much of the defective action of this vital organ. The trouble may be produced, however, not from any direct lesion in the brain, but from an irritation produced by toxæmia. Such toxæmia may be caused by the absorption of ptomaines resulting from the fermentation in the bowel. The brain symptoms thus produced may suddenly disappear when the bowel is thoroughly cleared out. Uræmic poisoning is also occasionally responsible for brain symptoms and death. I have a number of times detected changes in the kidney by an examination after death.

The lungs must be carefully watched in cases of diarrhœa, as they are almost invariably crippled if the disease is at all prolonged. As the action of the heart becomes weak, and consequently the pulmonary circulation sluggish, the recumbent posture leads to a passive congestion of the dependent portions of the lung. This stagnation of blood is soon followed by cell proliferation in the alveoli. The catarrhal pneumonia thus produced is not accompanied by active symptoms, and hence is apt to be overlooked. There is a slight cough, usually painless, and, as the lesion involves an immovable part of the lung not large in size, the respiration is not much quickened. There is hardly an exception to the rule that a severe or prolonged diarrhœa involves a lesion of the lung.

27 West Fifty-first Street.

The Medical Society of the County of New York.—At the annual meeting, on Monday evening of this week, Dr. Charles Carroll Lee was elected president for the ensuing year.

IODOFORM INJECTIONS IN THE TREATMENT OF TUBERCULOSIS OF JOINTS.

By C. G. DARLING, M. D.,
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In reference to iodoform injections in tuberculosis of joints, the *Journal* of August 27th quotes Dr. Curtis as saying that "he has found the injection beneficial in some cases, and in some cases he had seen no benefit from such injections."

The reports which may be read in the various medical journals concerning this common operation and the results that follow are far from uniform, and many are decidedly unfavorable.

Little has been said about any particular method of using the iodoform for injection or the treatment which should follow its use—conditions that are necessary to the success of any operation.

I have therefore ventured to take the reports of a few completed cases from Professor Nancrede's clinic at Michigan University Hospital to illustrate the value of the method adopted by him, and to show the uniform success which has followed the operation.

The emulsion used is composed of ten per cent. iodoform in a mixture of equal parts of water and glycerin. This mixture is boiled half an hour to thoroughly sterilize, and a fresh supply is prepared for every injection. That part over the joint selected for injection is carefully washed and covered with an antiseptic pad the same as in all important operations.

A small trocar is used to which can be readily attached the syringe containing the emulsion. These instruments are carefully sterilized and all air is driven from the syringe at the time of filling.

The joint should be carefully punctured at any safe point, and all fluid evacuated by gentle pressure. A recently sterilized three-per-cent. solution of boric acid is then used to wash out the cavity. This may be repeated until the fluid returns clear.

The syringe is then attached to the cannula and one to three drachms of the emulsion is slowly injected. The iodoform is diffused about the cavity by kneading and manipulating the parts. The cannula is withdrawn and the puncture carefully sealed with collodion and cotton.

The joint may then be fixed by a splint and rest maintained for several days or until the time for the next injection.

The second injection may be made in one to three weeks, according to the extent of disease present, the amount of the drug employed, and the results following the injection, for success depends upon the continuous action of the iodoform, so that with a small absorbing surface but little is required, while a larger surface needs a greater amount.

These injections are frequently made without the use of an anæsthetic, and after two or three hours the patient does not complain of pain, unless a large amount has been injected.

Case I.—L. C., female, aged six years. Two members of her mother's family had died of tuberculosis. While playing with some schoolmates in September, 1890, she received a slight injury to the left ankle. No attention was given to it at the time, but three days later it began to swell. She continued to use it until the following February, when she had to begin the use of crutches on account of pain.

About April 1, 1891, a plaster-of-Paris bandage was applied, by which rest was maintained for four weeks with no good result.

Examination of joint showed that it was partially disorganized, freely movable, with some crepitus, tenderness, and a great amount of swelling.

On June 19, 1891, the first injection of the iodoform emulsion was used, a second injection was made July 29th, and a third on December 3d.

The fourth and last injection was made March 3, 1892; four weeks later she began to use the ankle. She now walks and is apparently cured.

Case II.—C. R., male, aged ten years; mother living, father died of tuberculosis. Three years ago the patient fell into a post-hole, sustaining so slight an injury that no attention was given to it at the time. A few days later the right wrist became swollen and painful; the hand was partially disabled and since last August has been entirely useless. There is much swelling on the dorsal surface, and the least movement causes intense pain. One year after the fall the left leg began to give trouble near the hip joint, and a large abscess soon developed near the surface. This has been recently opened and discharges freely. Examination of granulation tissue from its walls confirmed the diagnosis of tuberculosis. On the 10th of March the wrist joint was injected and put at rest. Little pain was experienced; the swelling soon diminished and there was marked improvement. Four weeks later a second injection was made and the parts were kept at rest for ten days; the splint was then removed, movement was permitted, and a few weeks later, when the patient left the hospital, he had a very useful wrist, quite freely movable and free from pain.

Case III.—C. S., a female, aged six years, admitted to hospital January 18th. Mother living, father died of consumption. The child has never been strong, often complaining of pain in the chest. Three years ago the child slipped on an icy sidewalk and fell; shortly afterward began to complain of pain in right knee. About a year ago she began to have pain in right hip joint and swelling of the entire limb. Has not been able to use the limb for four months. Does not sleep well unless under the influence of anodynes, is very feeble, and much emaciated. Diagnosis, tuberculous disease of hip joint. Extension was immediately applied, and on February 18th the hip joint was injected with iodoform emulsion.

Prior to this time an abscess had formed in the tissues on the outer side of the thigh. On February 24th, after evacuating all tubercular detritus and washing out with sterilized boric-acid solution, the cavity was injected, but the disease had so far advanced that after an injection some weeks later it had to be opened, but the comparatively prompt healing showed that all tubercular tissue had been destroyed. On March 28th the Thomas splint was applied and the patient put on crutches. At the present time she is walking about the ward without the splint, slightly supported by one crutch, free from pain, and the diseased joint apparently cured. It is not necessary to say that her general condition is greatly improved.

Case IV.—Mr. C. C., student, aged nineteen years, entered hospital December 16, 1891. Parents living, but father has had repeated hæmorrhages from lungs. When nine years old his knee began to swell; was treated that time by the actual cautery and apparently recovered. About a year ago, on account of exposure to cold, the parts began to swell again. He did not suffer much pain, but the muscles of the leg began to waste away and the knee became flexed. On December 17th the leg was straightened; the knee joint was injected with the usual preparation of iodoform and put in a plaster cast. On January 9th he was discharged much improved.

The success of these operations probably rests upon the aseptic method of performing them, maintaining complete rest of the joint and not using the second injection until the first had done its work. We must not forget that tuberculous lesions are slow in recovering, and those of joints prove no exception to the rule.

FRAU GELLY: A UNIQUE THROAT SUBJECT.

By SINCLAIR TOUSEY, A. M., M. D.

Frau Gelly enjoys the probably unique distinction of being the only person engaged in her occupation. Nearly every medical visitor to Vienna within the last ten years will remember her. She is employed as a nurse in Schnitzler's throat clinic in the general hospital and acts as an assistant instructor; but her forte lies in hiring herself out to medical men as a subject upon which to practice laryngology and rhinology.

She comes to your rooms by appointment and brings all her own instruments. If you are a beginner, she explains the proper position for patient and physician, the adjustment of the forehead reflector, and the introduction of the throat mirror. Her throat is so insensitive that even the most awkward manipulations produce no gagging or other reflexes. She is able to tell whether the throat mirror is in correct position and to guide your hand so that you *must* see the vocal cords. She next points out with a probe the different structures to be seen. The next step is for the student to paint the larynx with some bland solution, and after that to touch the different parts with the probe as if applying a solid caustic. When you have become quite expert she introduces a glass bead so that it rests on one vocal cord and lets you remove it with Schrötter's forceps. The amount of confidence she has in your dexterity is indicated by the fact that she keeps a very tight hold of a thread attached to the bead.

Passing on to the nose, you are given practice in making applications with a brush or probe to the different fossæ, in passing a catheter into the Eustachian tube, and in posterior rhinoscopy. It gave me a very queer sensation the first time I saw her introduce the Eustachian catheter herself.

Frau Gelly has the reputation of being crafty. At the first lesson you can not help seeing every portion of the larynx, but as you become more expert she makes it more and more difficult, until finally she is worse than the most refractory dispensary patient. Her object is apparently to show you the necessity for an indefinite continuance of the sittings. But it is just at this point that most men stop.

Last year an American physician was working in Vienna on a modification (not yet published, I believe) of O'Dwyer's tubes, and during his experiments he intubated Frau Gelly's larynx a thousand times.

She receives about eighty cents an hour and is harder to make an appointment with than Professor Billroth. When she does make an appointment she never intends to keep it, but makes her appearance a week or two later.

Why should not New York produce a Frau Gelly? There are students enough in the post-graduate medical schools to render the occupation profitable if not agreeable.

A CASE OF
SYMMETRICAL THROMBOTIC GANGRENE OF THE FEET.

By JUAN JOSÉ MARTINEZ, M. D.,
VISITING PHYSICIAN TO THE HOSPITAL DE SAN JUAN DE DIOS, GRANADA, NICARAGUA.

F. C., aged fifty-five, married, laborer, of good history and habits, and denying syphilis, rheumatism, gout, etc., was admitted to the hospital and said that, fifteen days before, he was taken all of a sudden with a slight pain about the middle of the inner part of the left thigh, accompanied with coldness of the foot, which soon developed into a dull pain and about two hours later into a very severe one. By the end of the fifth day he noticed slight desquamation of the epithelium of the toes, and, as this process was advancing rapidly to ulceration, he deemed it best to consult a physician.

October 7th.—When first seen his foot was icy cold, of a dirty color, with ulcerations well marked at the base of the great toe; fœtid discharge; coldness extended up the leg; severe pain all over foot and leg; no pulsation below lower third of thigh. Temperature, 101° F.; pulse, 120, small, irregular, radial artery, rather hard; lungs are normal; in the heart nothing could be detected; kidneys were found normal.

9th.—Gangrene has advanced up to inferior third of leg. Temperature, 103° F.; pulse, 150. Excruciating pain in the foot.

10th.—Amputation between middle and inferior third of the thigh. Found a very large thrombus occluding the femoral artery, and the clot extended as far as the index finger could reach along the artery; the branches of the profunda had to be tied. The artery very atheromatous.

The patient was doing well, when, about the 16th, he began to complain of exactly the same symptoms of the left side on the right. The course of the disease on the right side was so alike that on the left that it is not necessary to give notes on it.

25th.—Amputation had to be performed at exactly the same level of the other side, finding the vessels in the same state.

Healing was very slow and by granulation, but the patient recovered and at this date is enjoying good health; but I suspect gangrene of the hands in a short time, because, so far as I can detect, the radial pulse is becoming harder and smaller.

One of my colleagues considered this case as a form of that disease which Raynaud first described, in 1862, in his *Thèse de Paris*, under the name of *asphyxie locale et gangrène symétrique des extrémités.* But Raynaud defines the disease that bears his name as "a neurosis characterized by an exaggeration of the excito-motor power of the cord presiding over the vaso-motor nerves." He named the disease local asphyxia because of the spasm in the vessels, and noticed the resulting gangrene as a new variety, *not resulting from thrombus or atheroma*, and having the peculiarity of involving generally only the superficial layer of skin.

Raynaud's definition overthrows such a diagnosis, and leaves the name with which the article is headed as the most proper for the case in question.

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Edited by FRANK P. FOSTER, M. D.

NEW YORK, SATURDAY, OCTOBER 29, 1892.

ANOTHER LEGAL ESTIMATE OF THE VALUE OF A PHYSICIAN'S SERVICES.

We have heretofore called attention to the litigation that has occurred in various portions of the country regarding claims physicians have made for remuneration for their services. San Francisco has the credit of recently having had a most curious decision in a case of this kind.

The circumstances, as published in the San Francisco papers, are that Dr. C. N. Ellinwood, who is a man of extensive professional experience, presented a claim against the estate of a deceased millionaire for $30,000 for professional services rendered to the millionaire and also to his wife, during their last illnesses.

The executors of the estate allowed the demand, and three heirs, to whom the entire estate would fall, signed a request to the judge to allow the claim. The decision of Judge Levy is so remarkable that we reproduce it:

"The executors of an estate may, in their wisdom and judgment, come to the conclusion that the claim is a reasonable one and ought to be paid, and they are responsible for their own actions, but the court acts upon its judgment and what it believes under the facts and circumstances as they are presented as to whether a claim is a just and proper one, and in no instance will the judge of this court approve a claim that it believes to be unjust, although it may be approved by the executors, and all parties interested may ask the approval of the court. It must be borne in mind that two of the parties who have requested the payment of this large sum of money are minors, and the court is here to protect their interests. They have no rights or authority to act in the matter excepting through the court. If the heirs to the estate are satisfied as to the justness and correctness of this claim, they are all nearly of the age of majority, and within a year and a half the whole estate will be disbursed to them share and share alike, and after the decree has been signed they are at liberty to do as they please with the funds they inherit. The question then presented is: Is this a just and reasonable claim against that estate? There is no comment to be made in reference to the ability and experience of the distinguished physician and surgeon who is the claimant is this matter. In the bill it will be seen that the services rendered to Mrs. Hobart were for four months, and those to Walter S. Hobart were for eight months, the entire services thus embracing only twelve months as attending physician of the Hobart family. Although inexperienced in the charges of medical gentlemen for professional services, I am at a loss to recall a case where such an amount has been charged. I am of the opinion that the services rendered for one year's time were not of the value of $30,000, but a fair, reasonable, and just compensation would be $10,000, for which amount this claim is allowed."

It seems to us that the argument that the heirs are nearly all of age, and can—in a year and a half—pay the remaining twenty thousand dollars of the physician's claim is pitiably weak. It is only surpassed by the judge's confession of ignorance of the charges made by medical men and of knowledge of a case where such an amount has been charged.

A few months past we referred to a legal decision in a suit to recover for services rendered, in which the amount allowed was equal to an annual compensation of $50,000. This sum, it has been stated, was paid annually to a physician in this city for daily attendance on a certain wealthy lady. And we know of several specialists who have been paid from twelve to twenty-four thousand dollars a year for such services as Dr. Ellinwood rendered. Of course such cases are by no means common; still they exist.

These fees, high as they seem to be, are not comparable to those received by prominent lawyers for caring for an individual's property. Why, therefore, should the expert physician who cares for his life be paid less? Is it possible that courts judge a man's property of more value than his life? If we could feel assured that Judge Levy's decision would have been similarly expressed for a claim for legal services rendered the deceased, we might feel more indulgent toward this absurd and unjust decision. But, as we know that less than a thousand dollars a month is an inadequate remuneration for a physician of such standing as Dr. Ellinwood who takes the chances of losing his practice to travel with a patient, we hope that the course of legal procedure in California will permit Dr. Ellinwood to appeal from the decision of Judge Levy's court.

MINOR PARAGRAPHS.

KITSUNE-TSUKI: A JAPANESE ZOANTHROPY.

Dr. L. Baret publishes in the *Annales médico-psychologiques* an interesting study of a neuropathic delirium with doubling of the personality that he has observed in Japan. It is known as *kitsune-tsuki*, or possession by foxes, and affects principally young girls and women, especially those among the lower classes of Japanese society. These classes entertain a superstitious fear of foxes, cats, and badgers, especially the first-named animals, because it is believed that they have the power of assuming the human, especially the female, form for the purpose of harassing poor humanity. It is believed that the fox may enter the body of a living person by any of the natural orifices, by the nipple, or under a finger-nail; and that after it gains access it lives its proper life, completely independent of that of its host. The latter hears and understands all that is said and thought by the fox, and occasionally the host and the intruder quarrel violently, the fox speaking in a voice that is altogether different from the natural voice of the person possessed. The predisposing conditions of this affection are a limited intelligence, a superstitious mind, delirious conditions (especially that following typhoid fever), and invariably a supposed knowledge by the person affected of similar cases, together with a firm belief in the possibility of such accidents. Dr. Baret believes that the disease is a form of hysteria in which self suggestion plays a large feature, and that the treatment is that by hypnotic suggestion.

RECTAL IMPLANTATION OF THE URETERS.

In the *Annals of Surgery* for September Dr. R. Harvey Reed describes some interesting experiments that he has performed on animals to determine the feasibility of implantation of the ureters in the rectum in cases in which one or both ureters are involved as the result of ovarian or other neoplastic adhesion; or in case of disease of the bladder to determine the feasibility of implanting both ureters and, if necessary, of extirpating the bladder. He found that the unilateral implantation of the ureter into the rectum was a possible and practical surgical procedure, but bilateral implantation always terminated fatally in the animals experimented on. The rectum readily accommodated itself to the presence of urine, and the stools were not necessarily liquid or frequent. Dr. Reed believes the experiments show that it is a safer plan to implant a ureter than to perform nephrectomy.

MALIGNANT DISEASE OF THE EYE AND ITS APPENDAGES.

At the meeting of the Section in Ophthalmology of the New York Academy of Medicine, on Monday evening of last week, two patients were shown from whom epitheliomata had been removed. In one, Dr. John E. Weeks's patient, the lower lid and eyeball, together with most of the contents of the orbit, had been removed and the upper lid had been brought down and secured over the entire field of operation. In the other, Dr. Thomas R. Pooley's, the eye was not involved and the surface left after removal had been covered by sliding flaps. Both these cases were very recent, the operations having been done during the past month, so the result in each is as yet unknown. If after three years or so have elapsed there is no recurrence they will prove important cases.

DISEASES OF THE PNEUMATIC SINUSES OF THE NOSE AND THEIR RELATION TO CERTAIN AFFECTIONS OF THE EYE.

This was the title of the paper of the evening at the same meeting, by Dr. G. W. Caldwell. He dealt mainly with acute suppurative inflammation of these sinuses, and regards inflammation of the ethmoid cells as particularly disposing toward asthenopia, while inflammation of the sphenoidal sinuses is more apt to affect the retrobulbar portion of the ocular apparatus. This subject does not seem to have been carefully studied before, and presents an excellent field for research.

SUDDEN DEATH CAUSED BY THE IMPACTION OF MEAT IN THE LARYNX.

At the meeting of the New York Pathological Society held on last Wednesday evening Dr. Herman M. Biggs presented a larynx in which a large piece of meat was impacted. The history of the case was that the man was eating in a restaurant when he suddenly became unconscious and died. Dr. Biggs stated that this was not a unique case in his experience. Dr. H. P. Loomis recalled that he had presented a similar specimen to the society during the preceding year.

POTT'S DISEASE AND SEROUS INFLAMMATIONS.

At the same meeting Dr. Henry Stearns presented a specimen of Pott's disease of the vertebræ, and asked what relation that condition bore to general well-organized peritoneal and pleural adhesions. Dr. Biggs stated that in his opinion the peritoneal and pleural conditions were the result of a miliary tuberculosis. He believed that a tuberculous process of the serous surfaces oftener ended in spontaneous recovery than tuberculosis elsewhere. Dr. S. T. Armstrong did not believe that this opinion was generally entertained, and said it was not apparent that fibrinous organization in persons presenting certain correlated symptoms of tuberculosis was the consequence of the existence of the *Bacillus tuberculosis*, with ultimate absorption of the bacilli and fibrinous degeneration of the miliary tubercles. Dr. Biggs stated that the well-formed pleuritic adhesions found in pulmonary tuberculosis served to support his theory, and Dr. W. P. Northrup agreed in the main with the views he advanced.

THE INFLUENCE OF CHLOROFORM ON THE HEART.

A cable dispatch to the London *Times* from Hyderabad states that Surgeon Major Lawrie has proved positively by cross-circulation experiments on animals that chloroform has no direct action upon the heart.

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending October 25, 1892:

DISEASES.	Week ending Oct. 18.		Week ending Oct. 25.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	0	0	0	0
Typhoid fever	43	14	49	12
Scarlet fever	66	3	61	6
Cerebro-spinal meningitis	1	0	2	3
Measles	29	2	46	3
Diphtheria	55	17	67	17
Small-pox	6	4	11	0

The New York Board of Health's Preparations against Cholera.—At a meeting of the New York Academy of Medicine held on the 20th inst. the following report was submitted:

"The committee of conference of the New York Academy of Medicine with the board of health respectfully submit the following report:

"On the 20th of September the committee received the following communications:

"'Health Department, 301 Mott Street,
"'New York, *September 16, 1892.*
''Dr. Stephen Smith, *President pro tem.*, *Conference Committee*,
"'*Academy of Medicine*,
"'*574 Madison Avenue*, *New York.*

"'Sir: At a meeting of the Board of Health of the Health Department held on the 14th inst., on motion of President Wilson, it was

"'*Resolved*, That the president of this board be and is hereby authorized to invite the Academy of Medicine to examine, through its conference committee and others, the preparations made by this department for the care and treatment of cholera patients in this city, and to confer with the board of health in respect to measures necessary to prevent the spread of the disease.

"'Emmons Clark, *Secretary.*'"

"'Health Department of the City of New York,
"'No. 301 Mott Street,
"'New York, *September 19, 1892.*
"'Dr. Stephen Smith, *President pro tem.*, *Conference Committee*,
"'*Academy of Medicine*,
"'*574 Madison Avenue*, *New York City.*

"'Sir: Having been authorized by the board of health to invite the Academy of Medicine, through its conference committee, to examine the preparations made by this department for the care and treatment of cholera patients, and to confer with the board of health in respect to measures necessary to prevent the spread of the disease, I respectfully extend such invitation to the conference committee of the Academy of Medicine, and should be pleased to be informed at what time and place it would be convenient and agreeable for the committee to meet this board and others.

"'Very respectfully,
"'Charles George Wilson, *President.*'"

"In compliance with this invitation your committee met the members of the board of health and others on the 28th of September, at the Willard Parker Hospital. Commissioner Bryant explained at length the preparations which the board had made with reference to the apprehended appearance of cholera in the city. These consist of: I. Organization of a corps of medical inspectors for the immediate care of each case of cholera and of the well persons who may be exposed to the disease. II. Ambulance service for the immediate removal of the sick to the hospital. III. Disinfecting corps to clean the room and disinfect clothing.

"In practice, on information being given of the location of a case of cholera, a detail of physicians at once visits the house and takes charge of the premises. If the sick person must be removed they attend to his being placed in the ambulance, and one accompanies him to the hospital. Others attend to the isolation of the family in the room and of the families in the house, and maintain a strict watch over all persons who may have come within the limits of infection during the period of possible liability to the disease. The disinfecting corps burns all soiled and useless clothing, and disinfects by boiling water all articles to be preserved which can be thus treated. The floors and furniture and all closets and exposed areas or passage ways are washed with sublimate solutions. During the possible period for the incubation of the disease the premises are rigorously quarantined and constant medical inspection of all exposed families is made to discover any cases of diarrhœa. If the immediate family of the sick person is destitute, it is removed to the hospital and the members are regarded as 'suspects,' who require constant watch and care.

"For hospital purposes the board has secured and fitted up the floating hospital of St. John's Guild, which lies at the foot of Sixteenth Street, East River.

"The disinfecting department is under the direction of Dr. Biggs, and when some improvements are completed it will answer every purpose required.

"The president, Commissioner Wilson, submitted plans for a new reception hospital, which were laid over for future consideration.

"The committee then personally examined the floating hospital and all of its arrangements for treating the sick, the isolation of cases, the handling and care of clothing and bedding, the methods of preparing and serving food, etc. The disinfecting plant was then visited, and the methods of treating infected materials were explained by Dr. Biggs.

"On the 4th of October the committee again met the commissioners in conference on the plans of the proposed new reception hospital. It was then learned that the board of health had deficient hospital accommodations on the grounds now occupied, and that it was possible to obtain additional area on the same block from the city.

"The committee submits the following conclusions as the result of this conference:

"1. The organization which the board of health has perfected to deal effectively with cholera meets our cordial approval. We do not believe that cholera can prevail widely in this city if the methods adopted are energetically applied to the early cases. The success which has already attended this plan of treating individual cases gives the most gratifying evidence of its utility.

"2. The hospital accommodations on the St. John's Guild vessel are admirably arranged for the comfort and successful treatment of patients and the protection of the public from infection.

"3. The disinfecting service, under the supervision and direction of Dr. Biggs, is ample for any emergency and will apply disinfection by all the most reliable means known to science.

"4. The committee indorses the proposition of the board of health to enlarge their permanent hospital accommodations at Sixteenth Street and East River, and urgently recommends that the proper authorities of the city be immediately applied to for the purpose of having the required lands set apart for that purpose.

"Respectfully submitted,
[Signed.] "Stephen Smith, M. D., *Chairman.*
"Edward G. Janeway, M. D.
"A. Jacobi, M. D.
"Richard H. Derby, M. D., *Secretary.*
"*October 6, 1892.*"

The Southern Surgical and Gynæcological Association will hold its fifth annual meeting in Louisville on Tuesday, Wednesday, and Thursday, November 15, 16, and 17, 1892, under the presidency of Dr. J. McF. Gaston, of Atlanta. Members of the medical profession are most cordially invited to attend. Besides the president's address, papers are announced as follows: Cervicitis, by Dr. Bedford Brown, of Alexandria, Va.; The Surgical Treatment of Endometritis, by Dr A. Vander Veer, of Albany; Experiences in Pelvic Surgery, by Dr. A. V. L. Brokaw, of St. Louis; Craniotomy upon the Living Fœtus is not Justifiable, by Dr. Cornelius Kollock, of Cheraw, S. C.; A Case of Extensive Hæmatocele resulting from Tubal Pregnancy rupturing into the Broad Ligament, by Dr. W. D. Haggard, of Nashville; Fibroid Tumor of the Uterus—Pregnancy—Rupture at the Fourth Month—Operation Six Weeks afterward—Death, by Dr. S. M. Hogan, of Union Springs, Ala.; A Contribution to the Study of Abdominal Pregnancy, by Dr. H. C. Coe, of New York; Tubal Pregnancy, by Dr. Joseph Price, of Philadelphia; Some Kidney Operations, with Remarks, by Dr. G. B. Johnston, of Richmond; The Surgical Treatment of Inguinal Hernia in the Male, by Dr. Henry O. Marcy, of Boston; The Symptoms of Fractures—Their Importance and Significance, by Dr. W. C. Dugan, of Louisville; The Part that Rectal Diseases Play in Women, by Dr. J. M. Mathews, of Louisville; Poisoning by the Bite of the Southern Spider, by Dr. J. T. Wilson, of Sherman, Texas; A Plea for More Rapid Surgical Work, by Dr. Ap Morgan Vance, of Louisville; Specialism as related to the Practice of Gynæcology, by Dr. W. Warren Potter, of Buffalo; The Relation of the General Practitioner to Gynæcology, by Dr. R. M. Cunningham, of Birmingham, Ala.; The Morphology of Abdominal Tumors, by Dr. Howard A. Kelly, of Baltimore; Modern Researches in Relation to the Surgery of the Genito-urinary Organs, by Dr. G. Frank Lydston, of Chicago; Amputation of the Breast for Malignant Disease, by Dr. H. Horace Grant, of Louisville; Fæcal and Other Fistulæ following Abdominal Section, by Dr. Joseph Taber Johnson, of Washington; The Nature of Shock and Allied Conditions, by Dr. W. C. Dabney, of University of Virginia; The Present Status of Drainage in Surgery, by Dr. A. Morgan Cartledge, of Louisville; Cholecystotomy, with the Report of a Case, by Dr. Edwin Ricketts, of Cincinnati; The Treatment of Stones in the Biliary Ducts, by Dr. W. E. B. Davis, of Birmingham, Ala.; Personal Recollections of Dr. Benjamin W. Dudley and his Surgical Methods, by Dr. Bedford Brown, of Alexandria, Va.; Intestinal Anastomosis without Mechanical Devices—Circulo-lateral Enterorrhaphy, by Dr. J. D. S. Davis, of Birmingham, Ala.; and others by Dr. George H. Noble, of Atlanta, Ga.; Dr. W. L. Robinson, of Danville, Va.; and Dr. W. Gill Wyle, of New York.

The Fifth International Congress of Otology.—Baron Léon von Lenval, of Nice, has offered a prize of 3,000 francs for the best instrument for improving the hearing-power of persons who are partially deaf. It is to be constructed on the principle of the microphone, and to be convenient to carry. Instruments which are to compete for the prize should be sent before the 31st day of December, 1892, to Professor Politzer, president of the jury, in Vienna. Only finished instruments will be allowed in competition. They must be complete in mechanical construction. The publication of the jury's decision and the giving of the prize will take place at the Fifth International Congress of Otology, in September, 1893. The members of the jury are: Dr. Politzer, Vienna; Dr. Gellé, Paris; Dr. Pritchard, London; Dr. D. B. St. John Roosa, New York; Dr. Grazzi, Florence.

An Excursion to Cumberland Gap was lately enjoyed by a party of physicians, at the invitation of Dr. Allan McLane Hamilton, of New York. At a banquet given at the Four Seasons Hotel speeches were made by Dr. Lewis A. Sayre, Dr. A. H. Smith, Dr. J. W. Brannan, and Dr. J. W. Wright, of New York, Dr. Rogers, of Louisville, and Dr. Bacon and Dr. Lindley, of New Haven.

The University of Vermont.—Dr. Frederick Peterson, of New York, has been appointed professor of nervous diseases in the medical school.

Changes of Address.—Dr. Calvin T. Adams, to No. 85 Madison Avenue; Dr. George H. Bosley, to No. 152 West Seventy-fourth Street; Dr. John Cabot and Dr. Caroline A. Cabot, to No. 168 West Forty-eighth Street; Dr. H. Marion-Sims, to No. 30 West Fifty-eighth Street; Dr. Charles McBurney, to No. 28 West Thirty-seventh Street.

Naval Intelligence.—*Official List of Changes in the Medical Corps of the United States Navy for the three weeks ending October 22, 1892:*

Kennedy, R. M., Assistant Surgeon. From the Training-ship Richmond, and to the Coast-Survey Steamer Bache.

Walton, T. C., Medical Inspector. Ordered to the Naval Academy.

Kidder, B. H., Medical Director. From the Naval Academy, and to the Naval Station at Port Royal, South Carolina.

Arnold, W. F., Passed Assistant Surgeon. From the Naval Station at Port Royal, and to the U. S. S. Richmond.

Spratling, L. W., Assistant Surgeon. Ordered to the Receiving-ship St. Louis.

Morris, Lewis, Assistant Surgeon. Detached from the Receiving-ship St. Louis, and ordered to the U. S. Steamer Monocacy.

Rothganger, George, Assistant Surgeon. Detached from the U. S. Steamer Monocacy, and ordered to proceed home.

Society Meetings for the Coming Week:

Tuesday, *November 1st:* New York Obstetrical Society (private); New York Neurological Society; Elmira, N. Y., Academy of Medicine; Buffalo Medical and Surgical Association; Ogdensburgh, N. Y., Medical Association; Hudson, N. J., County Medical Society (Jersey City); Androscoggin, Me., County Medical Association (Lewiston); Hampden, Mass., District Medical Society (Springfield); Baltimore Academy of Medicine.

Wednesday, *November 2d:* Society of the Alumni of Bellevue Hospital; Harlem Medical Association of the City of New York; Medical Microscopical Society of Brooklyn; Medical Society of the County of Richmond (Stapleton), N. Y.; Penobscot, Me., County Medical Society.

Thursday, *November 3d:* New York Academy of Medicine; Brooklyn Surgical Society; Society of Physicians of the Village of Canandaigua, N. Y.; Medical Society of the County of Orleans (annual—Albion), N. Y.; Boston Medico-psychological Association; Obstetrical Society of Philadelphia; United States Naval Medical Society (Washington).

Friday, *November 4th:* Practitioners' Society of New York (private); Baltimore Clinical Society.

Saturday, *November 5th:* Clinical Society of the New York Post-graduate Medical School and Hospital; Manhattan Medical and Surgical Society (private); Miller's River, Mass., Medical Society.

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Letters to the Editor.

CHOLERA AND IMPORTED RAGS.

New York, *October 25, 1892.*

To the Editor of the New York Medical Journal:

Sir: I send you herewith copies of my correspondence with Dr. Hamilton. You will oblige me very much by publishing as much of it as you think proper. Augustine Smith.

"110 Nassau Street, New York, *September 22, 1892.*
"Allan McLane Hamilton, M. D.,
"*Secretary of the Medical Advisory Committee of the Chamber of Commerce.*

"Dear Sir: In the report prepared by your committee and submitted to the Chamber of Commerce regarding the quarantine of passengers and the disinfection of merchandise arriving at this port I find the following statement of opinion:

"'A thorough, prolonged, intelligent exposure of rags to live steam, or prolonged boiling, are the only methods known to us by which they may be rendered absolutely safe.'

"As a member of the American Paper Manufacturers' Association, and as chairman of a committee appointed at the fifteenth annual meeting of the association, held at Saratoga on the 27th of July last, to submit to the Treasury Department the views of the association regarding the possibility of infectious diseases being brought to this country in imported rags, I am immediately interested in the question concerning which your committee has expressed its opinion. I am also a member of the Chamber of Commerce, in which the matters treated of in your report have recently been discussed.

"The American Paper Manufacturers' Association represents 1,200 paper mills, employing over 100,000 operatives, and having an invested capital of $50,000,000. The raw material of this industry to a considerable extent consists of rags gathered in foreign countries and imported in bales. The statement I have quoted from your report leaves it to be inferred that your committee regards imported rags as a class of merchandise from which infection is to be feared. In order that the association of which I am a member and the committee of which I am chairman may be enabled to take the proper steps to protect the employees in the paper-making industry from this danger, if such danger exists, I would thank you to communicate to me any evidence your committee may have that the infection of Asiatic cholera has ever been brought into this country in imported rags, or that any case of the disease has ever been traced to that source.

"I remain respectfully yours,
"Augustine Smith."

"110 Nassau Street, New York, *September 27, 1892.*

"Allan McLane Hamilton, M. D.,

"*Secretary of the Medical Advisory Committee of the Chamber of Commerce.*

"Dear Sir: I inclose a letter I have received from Mr. William T. Barker, of Boston, secretary of the committee of the American Paper Manufacturers' Association, of which I am chairman.

"Mr. Barker desires me to forward to him a copy of your reply to my letter of September 22d, requesting you 'to communicate to me any evidence your committee may have that the infection of Asiatic cholera has ever been brought to this country in imported rags, or that any case of the disease has ever been traced to that source.'

"I have as yet received no reply to my letter of September 22d, and beg to remind you that the committee of our association is anxious to receive the information asked for at as early a moment as you can find it convenient to reply to my communication. The American Paper Manufacturers' Association is naturally desirous of full information on this point in order that it may take measures to guard against the danger, if it is shown that any such danger exists. On the other hand, if there is no evidence that imported rags are a source of cholera infection, a statement of that fact will relieve the anxiety of the association and of the public, which has been aroused to some degree by assertions implying that bales of rags were a medium through which Asiatic cholera might enter the country.

"I remain respectfully yours,
"Augustine Smith."

"The American Paper Manufacturers' Association,
"Boston, *September 24, 1892.*

"Augustine Smith, Esq.

"Dear Sir: Yours of the 23d at hand, with copy of your letter to Dr. Hamilton. I shall be pleased to receive a copy of his reply, and should you deem a meeting of our committee desirable I trust you will let me know.

"William T. Barker, *Secretary.*"

"20 East Twenty ninth Street,
"New York, *September 29, 1892.*

"Augustine Smith, Esq., *110 Nassau Street.*

"Dear Sir: I am in receipt of your communication and, in reply, would refer you to report of the Advisory Committee of the Chamber of Commerce regarding the general subject of disinfection. As to more specific information, it seems to me that this may be best obtained by reference to the literature upon the subject to be found in the medical libraries of this city and elsewhere. Very truly yours,

"Allan McLane Hamilton, *Secretary.*"

"110 Nassau Street, New York, *September 30, 1892.*

"Allan McLane Hamilton, M. D.,

"*Secretary of the Medical Advisory Committee of the Chamber of Commerce.*

"Dear Sir: I have to-day received your note of September 29th, in reply to my letters of September 22d and 27th, asking you to communicate to me the evidence on which your committee based its statement in respect to imported rags. You refer me to the report containing that statement and to 'the literature upon the subject to be found in the medical libraries of this city and elsewhere.' I am greatly disappointed that you have not replied in a more specific manner to my request. I hardly need to remind you that the statements in your report command the respect and credence naturally due the eminent gentlemen of your profession whose names were affixed to it. A statement that cholera can be conveyed in rags has caused great loss, confusion, and embarrassment in the paper-making trade, of which imported rags are an important raw material. The implication that rags are a source of dangerous infection has made their importation difficult and expensive and has caused great trouble in their transportation to our mills.

"The resulting loss has been very great. That loss would be cheerfully borne were the manufacturers of paper able to convince themselves that it was a sacrifice in the interest of the public health and safety. But not only do they fail to obtain from you, as secretary of the advisory committee, any evidence of danger, but they have important negative evidence to the contrary. In the twenty-ninth annual report of the Chamber of Commerce, pages 32 and 38, you will find a report made by a committee consisting of Daniel Drake Smith and Constant A. Andrews, appointed to investigate the rules and regulations relative to the disinfection of rags. In that report, made in 1886, the committee state: 'Since 1832 we have had several visitations of cholera, and never had any regulations, so far as known to your committee, for the disinfection of rags. There is no record of any case of cholera during this period traceable to imported rags or any other merchandise.' Dr. Koch is quoted by the committee as saying that at the cholera congresses of Constantinople and Vienna nobody was able to furnish a single instance of the spread of cholera by this means; neither was any evidence furnished at the congresses of Berlin and Rome. It is further stated by the committee that in the British Parliament Sir Charles Dilke and Mr. G. Russell, secretary to the Local Government Board, declared that there was no instance on record of rags having conveyed cholera. I may add that the editor of the *Paper Trade Journal* addressed letters of inquiry to every paper mill in the country, and was informed that no case of cholera ever occurred in any of them.

"It is a source of great regret and surprise in the paper-making trade that your committee should have made a statement so positive and so damaging to our interest without having in your possession, as we must infer from your letter of yesterday that you did not have, any evidence that imported rags have ever brought, or are more than any other merchandise likely to bring, into this country the infection of Asiatic cholera.

"I remain very respectfully yours,
"AUGUSTINE SMITH."

Proceedings of Societies.

MEDICAL SOCIETY OF VIRGINIA.

Twenty-third Annual Meeting, held at Alleghany Springs, September 13, 14, and 15, 1892.

(Concluded from page 392.)

Colonic Irrigation and Feeding per Rectum; how best attained.—This was the title of a paper read by Dr. EDWIN RICKETTS, of Cincinnati, in which he gave a short description of the colon, and showed a rectal rubber tube with which he washed out the colon.

What shall be done with the Imbecile? was the title of a paper read by Dr. S. J. FORT, of Ellicott City, Md. Dr. Fort is the superintendent of a private institution in that city where feeble-minded and epileptic children are trained and educated according to their capacity and mental ability.

Common Sense in the Treatment of Discharges from the Ear.—Dr. ALEXANDER DUANE, of New York, presented a paper with this title. After showing the importance of the subject to the general practitioner, who was prone to slight it, he stated that the therapeutic principles which should be enforced here were the same that governed the treatment of suppuration anywhere else, which were comprised in cleanliness, drainage, and the removal of the badly diseased tissues. Common-salt solutions he considered the best for the thorough cleansing of the diseased part. All details should receive careful attention, especially when committed to the patient himself, as they usually were. Politzerization to force out the residual discharge might be used as an adjuvant to syringing. If this treatment did not cure, astringent powders (boric acid, alone or combined with zinc oxide) should be used, but only after thorough cleansing by preliminary irrigation. Granulations and polypi must be carefully removed (of course with a good light and the patient under full control). Alcohol, with or without the addition of corrosive sublimate, could be used to check the recurrence of the granulations. Iodoform was useful in cases of caries. Unless there was extensive caries, or the drainage was prevented either by the situation of the disease (as in the attic) or by inflammatory hypertrophy, these measures would usually be successful. If they failed, the diseased parts (drumhead and ossicles) should be removed at once, and by a specialist if possible, as the operation required great delicacy of manipulation. Dr. Duane believed that by following this treatment nearly all cases of chronic suppuration could be cured and the danger of cerebral involvement averted, also that the necessity of doing a mastoid operation could be done away with altogether.

Modern Electrical Methods as a Substitute for Surgery in Certain Pelvic Affections was the subject of a paper by Dr. G. BETTON MASSEY, of Philadelphia. He considered diseased ovaries, fibroid tumors, and uterine displacements. He stated that, in spite of the wholesale castration of women for salpingo-oophoritis, they were rarely in better health after the operation, not only on account of the cut nerves, adhesions, etc., but because the primal disease—uterine inflammation—remained untouched. The writer stated that this condition preceded the catarrhal extension to the tubes, which he regarded as exceedingly important in most cases. Direct galvanic applications to the uterus were indicated, and would result in the restoration of an unmutilated woman to society. He also considered displacements to be secondary effects of microbic infection, and the use of pessaries was irrational treatment. He regarded a reduction of oversize and weight and the restoration of the muscular tone to be preferable to the unnatural resort to a skeleton in the vagina; and, in accomplishing this, well-considered intra-uterine applications of both the galvanic and faradaic current were indicated. The writer mentioned sixty-eight cases treated by him with modifications of Apostoli's method, with good results in sixty-four cases.

Excision of the Female Breast was the subject of a paper by Dr. ROBERT O. OWEN, of Lynchburg. A very large percentage of the growths within the female breast were, or would become, if neglected, malignant. Painful enlargements of the breast, not ordinary abscesses, should be watched and excised if the slightest disposition to malignancy presented itself. After describing the old method of operation, he reported a recent case in his own practice to explain the method he now advocated as the best. Miss L., aged nineteen, with a slight family history of cancer, had (April 2, 1892) an ulcerated scirrhus of the right breast. She was anæsthetized after the breast had been made aseptic by soap and water, sulphuric ether, and mercuric-bichloride (1 to 2,000) solution. Two semilunar incisions were made above and below, and the growth was excised. Bleeding was controlled by torsion, and the oozing was left alone. Deep interrupted sutures were then taken at every half-inch, except for the space of half an inch at each extremity of the wound. The flaps were then drawn together at each extremity. A needle threaded with fine silk brought in close apposition the skin along the entire closed line of the wound. The wound was then flushed out through the drainage-tube (still *in situ*) with a quart of warm Thiersch's solution. After this tube was withdrawn the openings through which it had passed were closed by deep and close superficial sutures. The whole length of the incision was then painted with iodoform collodion. The oozing having been left uncontrolled, the entire cavity filled with blood, which could not escape on account of the superficial sutures and which by its pressure controlled further oozing. Thirty-six hours after the operation one deep and several of the close superficial sutures at each end of the wound were removed, and by gentle bimanual pressure the contained clot was removed. The wound was then flushed with Thiersch's solution and injected with a small syringeful of a mixture of a drachm of aristol, half a drachm of boric acid, an ounce of resin ointment, three drachms of olive oil, and eight drops of liquid carbolic acid.

Two pads of moist gauze were then placed respectively over the upper and lower flaps. These pads were held *in situ* by long bands of rubber adhesive plaster extending from above the clavicle to the middle of the abdomen and extending half way round the body. These plaster strips not only held the pads in place, but equalized the pressure and prevented any strain on the sutures. Over this was placed one thickness of gauze, and then a thick layer of borated cotton, covered by another thickness of gauze. The whole was covered by a piece of oil silk and secured by a roller bandage. This was removed on the sixth day after the operation, and the superficial stitches were withdrawn; on the tenth day the deep sutures were removed, and on the eighteenth day the patient returned home perfectly cured. One of the chief points was to control the bleeding vessels by torsion. Some surgeons erroneously seized the bleeding point and adherent surrounding tissues *en masse*, and by a vigorous twist tried to stop the bleeding. This did more harm than good, as the tissue, when twisted so tightly, was apt to slough and put foreign matter in the wound, while, if it was not twisted tightly, there was a probability of secondary hæmorrhage. Dr. Owen separated the vessel from the surrounding tissue as cleanly as possible, and caught it at the end with a Kœberlé's forceps and drew it out. Then with another forceps he grasped the vessel a quarter of an inch from the end and held it firmly while giving two or three steady turns with the forceps which held the end. Sometimes he used *serres fines*, but they should be accounted for just as in abdominal operations. The great feature of this operation was the perfect closing of the wound after cleaning and allowing it to fill with oozed blood. The most violent partisan of modern antisepsis could but acknowledge that one's own blood was aseptic as regarded himself, and no more rigid asepsis need be preserved than to allow such a cavity to fill with the patient's own blood. Dr. Owen did not approve of losing time by trying to control the oozing with hot water, etc., but thought the method described the surest and quickest, as in the case of Miss L., who had driven home across the country, fifteen miles, on the eighteenth day after the operation.

Bacteria and Disease.—Dr. Charles M. Blackford, Jr., of Lynchburg, read a paper on this subject. He stated that bacteria affected the human system in several ways: 1. They directly attacked and destroyed the tissue in which they lodged. Thus, in inflammations followed by pus formations pyogenic bacteria were probably directly responsible. 2. A by-product of the life of the micro-organism was the agent that immediately did the damage. Thus, in tetanus, the active poison was an alkaloidal product or a mixture of such products, resulting from the life of the bacillus of tetanus. The alkaloidal products might be isolated, and were as certain to produce tetanus if introduced into the system in sufficient quantity as morphine was to produce its physiological effects. 3. Some bacteria were pathogenic only at times; under some peculiar environments they acquired malignancy. 4. Conversely, some bacteria that were naturally violent and malignant, in an unsuitable medium became attenuated, so that, on inoculation, only a very mild type of the disease would follow.

After briefly stating the modes by which different species of bacteria are distinguished he noted that, in order for it to be regarded as the cause of a disease, a suspected bacterium must fulfill the following conditions: 1. It must be present in all cases of the disease. 2. It must not be found in the body except during the course of the disease; but this condition must be liberally interpreted, for there were conditions under which the same bacterium seemed to be malignant at one time and not at another. 3. It must produce the disease when properly introduced into an animal susceptible to that particular disease.

Tyndall had long ago shown that the motes in the air were the origin of the micro-organisms found in the putrescent material. Acting on this fact and on the results of Pasteur's experiments in the same direction, Lister had conceived the idea that by excluding these germs from a wound, or killing them if they gained admittance, putrefactive processes could be prevented in the wound, and that healing by "first intention" would result. So he had devoted much care and study to dressings to accomplish this, the details of which were familiar. The principal opponent to antisepsis was Lawson Tait, but so thorough was his asepsis that antisepsis was unnecessary in his practice. Anthrax, or malignant pustule, particularly attacked wool-sorters, and usually ended in death from them any abscesses incident to the disease. It was caused by specific bacilli in the blood and tissues of those affected. An interesting fact relating to them was that culture media had the power of increasing or diminishing their virulence. The most plausible mode in which anthrax bacilli caused death was by separating the complex combinations in the organism into toxic substances.

Dr. Joseph Price, of Philadelphia, thought Senn's statement that at this time surgical pathology had almost become synonymous with surgical bacteriology was rather too sweeping. Even Lister was not so enthusiastic over antisepsis as formerly. Too close following of the dicta of such teachers had often led to carbolic-acid poisoning in midwifery. The whole ground was covered by adopting the "gospel of cleanliness"—absolute cleanliness—and simple pure water was all-sufficient. There should be no wiping of hands just before the operation with towels which had probably come from the towel rack in the bath-room. The finger nails should not be so colored as to remind one of the badges of mourning. In short, everything should be surgically clean before, during, and after operations—patient, doctor, nurses, bedding, dressing, instruments, room, etc. The new school of surgeons had done wonders, but it should not be forgotten that the old school had also done much.

Dr. L. G. Pedigo, of Roanoke, defended Listerism. Of course, Lister had gone too far at first, but progress came by stumbling and correction. It had taken Lister fifteen years to get professional attention directed to antiseptic surgery; but now, with its improved methods, it had come to stay—its general principles were established. Germs caused suppuration and destruction of organic tissues, but chemical agents were sufficient to destroy them. Lister's followers had defined the general character of surgical filth, and had gone to work to destroy it as well as the soil. Tait practiced Listerism. The speaker thought Dr. Price had gone too far in his allegations for aseptic surgery as opposed to antiseptic surgery. In fact, he trusted Philadelphia hydrant water for washing wounds, although he boiled only a part of what he used. If the report of the health officers of that city was true, that water was notorious for its impurities, etc.

Dr. Thomas J. Moore, of Richmond, said the medical press had of late been too radical in its advocacy of asepsis, when, in truth, surgical practitioners of to-day were modifiers—were trimming off the angular points which misshaped the truth. Ten years ago a distinguished surgeon had remarked that the doctrine of bacterial effect in surgery had come to stay only a few years, and it appeared now that he was but a prophet. Those who had advocated the germ causation of disease had not been those who made advances in the practice of medicine—he was not referring to surgery. There was a something not yet defined that caused disease. Pasteur had not demonstrated that life was essential to fermentation. Antiseptic surgery had done great good. Listerism had brought about a relative degree of perfection; asepsis was simply a step in advance of antisepsis.

Dr. Massey had been a believer in germs as the cause of disease for the past ten years. In fact, his convictions were so strong on the subject that he should think himself a murderer if he did not conduct his practice on this basis. Indeed, it was clear that the small minority of the profession who still said they did not did really believe in germs. This was shown by the boiling of the water in which they kept their instruments. They said they did it to get rid of the "filth"—why not say at once "germs" or "bacteria," as the case might be? Their acts spoke louder than their words. Technical loop-holes for death should be closed. The safeguards in the healthy subject against the effects of disease germs were the white corpuscles (phagocytes) in the blood. They were constantly engaged in the destruction of germs. According to the number of normal phagocytes in the blood were human beings able to resist disease germs.

Dr. S. T. EARLE, of Baltimore, said that much of the cause of discussion seemed to be simply a matter of difference of terms and of difference as to the means to be employed to secure the same result. Dr. Price, for example, sterilized his ligatures in hot water in advance, and left them in the abdominal cavity to be digested or absorbed, without risk; whereas if he sterilized them with certain chemicals they might not be absorbable. The important point in undertaking any operation was to decide what was and what was not noxious material to be used in the wound. Undoubtedly it was the life of germs that we had to battle with in the practice of surgery or obstetrics. A good deal of Dr. Price's success was due to the few ligatures he applied, as an increase in the number of ligatures increased the amount of necrotic tissue.

Dr. BLACKFORD said that Dr. Price had discussed practice, not principles. Antisepsis was an old practice. The preservation of the Egyptian mummies furnished an illustration of the practice. The whole principle involved—whether by antiseptics or asepsis—consisted in the effort to neutralize what Dr. Price preferred to term surgical filth, but which was most generally included under the classification of bacteria.

A Successful Case of Colectomy for the Closure of an Artificial Anus was reported by Dr. EARLE, of Baltimore. The method of enterorrhaphy used in the operation was that recommended and used by Dr. Halsted, of the Johns Hopkins Hospital, which was found to answer very satisfactorily. The patient made a good recovery, had his first evacuation from his bowels by the rectum on the sixth day after the operation, and left the hospital at the end of the third week. The chief points brought out by the report of this case were the great strength of the fibrous coat of the intestine and the reliance that could be placed on it in all cases where it was necessary to suture the intestine, without resorting to plates or any foreign substance to strengthen the union, a point first brought out by Dr. Halsted.

Injuries of the Knee; their Treatment and Results, with Special Reference to the Prevention and Cure of Suppurative Action in and about the Joint, was the name of a paper read by Dr. M. W. O'BRIEN, of Alexandria. He thought it should be a surgical rule that absolute rest by fixation should be given the joint and entire limb, from the body down, in the case of every wound into or near the knee joint and in every congestive or inflammatory condition of that joint. Antiseptic surgery should be used to draw out any serum that might be effused into the knee-joint cavity; the foot should then be raised and the entire limb put up in plaster—the Bavarian dressing being the best—with the leg straight. This plaster made both extension and counter-extension, securely locked the joints, held every muscle firmly but gently in its place, and put the reflexes to sleep. The limb rested, the circulation was equalized, pain was relieved, heat and fever went, and the patient rested without an opiate. This splint could be opened, like a book, if needed, through its whole length, the joint inspected, etc., and the mold put back and held with a roller; in brief, the limb was kept in a position as comfortable as possible. A knee-joint injury should never be dressed in a flexed posture. This was contrary to the views of many surgeons, but experience and results proved that a flexed inclosed leg was a nuisance, particularly if the flexion was great. With fixation in a straight posture perfect rest was secured. To apply evaporating lotions and put the leg at so-called rest on a pillow, as advised in many text-books, was simply ruinous to the leg; but by keeping the leg straight in the plaster dressing, as spoken of, it was rare to have pus form or ankylosis result. If pus did form, the joint should be laid wide open, the fluid washed out thoroughly, drainage-tubes put in, everything flushed out as often as might be necessary with corrosive-sublimate water, and the general condition of the patient improved by food and the use of quinine. The joint could be flushed without disturbing it by leaving the joint bare for some inches and connecting the portions of the splint above and below the knee by zinc strips under the joint, extending well up on the thigh and down on the leg. It was surprising what could be done for chronic suppuration by freely opening the joint at the pus salients, washing and flushing the joint and pus cavities with bichloride solution, often by putting the leg straight while the patient was under ether, and holding it so with plaster from the body to the toes. Under this treatment he had seen a temperature of 105° F., and a pulse of 160, with constant nausea and diarrhœa, subside in a day, bed-sores heal rapidly, and the sweats stop—in a word, the most appalling constitutional condition subside like magic, and a useful limb result. Without antiseptics, of course, no such result could be attained. In all cases of severe injury or wound involving the knee joint, it should be dressed immovably and the leg put at rest in a straight posture.

Acute Inflammatory Earache was the title of a paper by Dr. J. H. CLAIBORNE, of New York. He alluded altogether to cases of acute catarrhal otitis media, such as were caused by the causes of acute colds in general. He did not approve of opening the drum of the ear, unless it was done by an expert. He recommended instead the use of the Eustachian catheter and gradual long-continued inflations three or four times every few hours to empty the middle ear. He did not apply silver nitrate in acute cases, but in subacute cases he applied a four-per-cent. solution of this salt. Sometimes Dobell's solution sprayed into the nose and throat acted well. He placed his confidence in the following plan of treatment:

1. Hot ten-per-cent. solutions of cocaine instilled into the outer ear, retained from five to ten minutes. 2. Hot solutions of boric acid instilled into the outer ear, while spongio-piline soaked in hot water was applied over the whole ear surface. Hot salts might be used. 3. Inflation by the bag and by the continuous method with the Eustachian catheter. 4. The administration of a drastic dose of Epsom salts.

After the acute stage was passed, blisters behind the ear might be useful, but they did no good during the acute stage.

Gonorrhœa in Women was the subject of a paper by Dr. GEORGE T. HARRISON, of New York. He regarded this as a serious complaint and one not to be treated lightly as it often was. To Noeggerath belonged the credit of first directing attention to its importance. Clinical facts, together with experiments and investigations, proved that all the inflammatory processes appearing in consequence—whether in the Fallopian tubes, the ovaries, the peritonæum, or the broad ligaments—not only could be but were produced by the gonococcus of Neisser. This germ produced a group of diseases peculiar to women, and might exist for years before displaying any of the characteristic phenomena. He stated that the wife of a man who prior to matrimony had been the victim of this disease would sooner or later have some form of gonorrhœa. He asserted further that nine tenths of the cases remained uncured, and that of a hundred women who married men who had had this disease, hardly ten remained healthy. He classified the consequences under four heads: (1) Acute perimetritis; (2) recurrent perimetritis; (3) chronic perimetritis; and (4) oophoritis. Microscopic examinations had proved the existence of gonococci in pus taken from diseased tubes, and it was generally conceded that most of the inflammatory conditions of the tubes could be traced to this disease. The symptoms were that the uterus was enlarged and sensitive and menstruation was profuse and painful. The infection rarely extended from the uterus to the Falloppian tubes, producing purulent salpingitis, the pus through this route reaching the peritoneal cavity, producing circumscribed peritonitis, and involving to a greater or less degree the ovaries and the broad ligament. Pains ensued, and pus exuded from the disturbed tube of the corresponding side. In consequence inflammatory action was set up, the tube became occluded by adhesions, then distended, lost its curves, and became sausage-like. Any over-exertion brought on acute attacks producing peritonitis. Nervous symptoms were induced which resulted in neurasthenia or hysteria. Sterility often resulted. In the treatment prophylaxis naturally claimed the first and most careful attention. Dr. Harrison thought it hardly possible to stamp out this disease, though the general practitioner could correct it to a large extent. The gynæcologist should be careful in dilating a woman's womb who was affected with gonorrhœa, as the infection was easily carried into the uterine cavity, thence into the tubes, etc. Operations were not always demanded, as dilating the uterus, curetting and packing with iodoform gauze would often relieve; but, if the conservative methods failed, then the surgeon's more radical aid was demanded. Operations were justifiable only when no more dangerous than the disease itself. Owing to the advance in surgery, operations had been robbed of many of their dangers; but the environments of the patient must always play an important part in the treatment.

Hypnotism as a Therapeutic Agent was the subject of a paper by Dr. W. L. HOWARD, of Baltimore.

Sexual Hypochondriasis and Perversion of the Genesic Instinct.—Dr. IRVING C. ROSSE, of Washington, read a paper on this subject. Omitting reference to such subjects as spermatorrhœa, venereal excesses, teratological conditions of the genital organs, and the high degree of excitement often found among the insane, he limited his paper to the consideration of the manœuvres of either sex to produce the venereal orgasm independently of the conditions of normal coitus, known comprehensively as genital abuse. Of all hypochondriacs of either sex, those who referred their sufferings to the genital organs were the most miserable, whether they were onanists, nymphomaniacs, or syphilophobes. It was an error to suppose that aberration of the genesic instinct was confined to our species, time, race, or latitude. Bestiality or sodomy had, perhaps, existed from all time. Juvenal had mentioned that donkeys were much sought after by women. A quotation from Plutarch indicated that there were relations between animals and human beings—men and women—in the Latin empire. Soldiers in those days satisfied their passions on anything—mules, hogs, sheep, etc. In our day this crime was less prevalent, though far from rare in large cities. In San Francisco, for instance, a few years ago, there could be witnessed, on paying a small sum, a show in which a Newfoundland dog and a prostitute were the actors; in fact, this woman averred that if a woman once copulated with a dog she would ever thereafter prefer this animal to a man. Undoubtedly there was a difference in the erotic constitution. An Anglo-Saxon, for instance, did not seem capable of so much salaciousness as a Turk, an Arab, or a negro. The sodomitical habit of pederasty was one of the oldest infamies of the Adamic race, and was not confined to the low and ignorant. History told us, for instance, that Philip was soiled by this infamy; that Cæsar was "the husband of all women and the wife of all men"; that Nero, Alcibiades, and Adrian were addicted to this vice; that even Horace, in the latter part of his career, had an attachment of this kind. One of the poems of Vergil was full of pederastic allusions. About the fifteenth century religious mysticism and genesic insanity assumed monstrous proportions. As to geographical distribution, there was a greater prevalence in Asiatic countries. The concert of the two prostitutions—feminine and pederastic—in some of the large cities of the world was well known. Dr. Rosse cited instances of recent record in police courts, in the newspapers, etc., in New York, Philadelphia, Washington, San Francisco, and other cities. Dr. Pouillet, of Paris, had written of a form of the vice that was so common among the French that there were but few young men upon whom it had not been practiced by the prostitutes of that country. Tribabism was becoming a curse in some cities of this country. The police of Washington had "raided" a house in Lafayette Square, under the shadow of the White House, and arrested eighteen men—white and black—who hired themselves for the gratification of customers, men and women. The author knew a woman who, from curiosity, submitted herself to the lingual and oral manœuvres of the performance and had a violent hystero-cataleptic seizure as the result. Dr. A. F. A. King told of a case of tribabism coming under his observation in which a young unmarried woman became *enceinte* through her married sister, who committed the simulacrum of the male act on her just after copulating with her husband. Such cases showed that the question of sexual perversion was one of social hygiene touching mental pathology in many points. Lawyers and doctors and juries wanted to know whether such cases were the result of insanity or of a criminal tendency. We as physicians were compelled to recognize that continuous suggestion, or the reading of lewd literature, or excessive indulgences in fondling embraces under improper circumstances, etc., did affect the lower lumbar reflexes in such a way as to bring about sexual hypochondriasis, not to mention their influence as wide disseminators of immorality and as teachers of crime. Many of the methods of societies for preventing vice and bringing about prohibitory legislation as to vicious literature, etc., though well meant, were both reprehensible and impracticable. Over-zeal led to false philosophy and sophistry like that of the prohibitionist, who would enact summary laws. The treatment of such cases of unnatural practices as had been referred to consisted in prevention and education, with the employment of proper medical and surgical measures. Cultivate the self-control, especially about the epoch of puberty. As an adjuvant, nothing was better than gymnastic and athletic training. A verification of the judiciousness of this advice was often found in champion athletes, many of whom were temporarily impotent. It was a well-known fact that so-called religion and erotic debauchery often went together. Such things manifested disturbances of a badly balanced nervous system which we could not view with serene indifference.

The Treatment of Hard Tumors in the Pelvis.—Dr. PRICE read a paper on this subject. Many a death after removal of large tumors, he said, had been attributed to surgery, when not surgery, but the too long neglected condition of the patient, had caused it. Pus was often only the result of inflammatory changes in various kinds of tumors. Undoubtedly some patients having pus in the pelvis had got well without surgery; but experience taught that, as a rule, it killed unless removed. Dermoid tumors especially required early attention. One could suspect one when the tumor was small and very painful. The point of suppuration might be far distant in such cases, but the pain was none the less severe, and the urgency of the case was unquestioned. Dermoid tumors were especially apt to degenerate, with the formation of extensive inflammatory adhesions and pus. This being the case, the same rule applied to their removal as was applied to the removal of pus itself—to wit, get rid of it as soon and as entirely as possible. If suppuration and pain were reasons for early operations, so the results of these complications were still greater reasons for early surgical attention. As adhesions must follow inflammation, and so interfere with the functions of the bowel, bladder, etc., it was only a confession of ignorance as to what surgery could do for these tumors to leave them to the "conservative forces of Nature." The wise and conscientious surgeon would not hesitate to operate if the patient had a chance of recovery, and he would not promise a wonderful recovery in order to secure the operation and the fee. Another danger of small hard tumors, especially in the pelvis, was that they interfered with conception, and often with delivery. A dermoid on one side might bring on abortion after abortion when the other side was entirely healthy, and so cause much suffering, both mental and physical. Hard tumors of the uterus, whether large or small, were accompanied with just such dangers as had been described, and the longer they were allowed to grow, and the more they were interfered with in a meddlesome way, the more dangerous did they become. In Dr. Price's experience, contrary to the assertions of some statisticians, they occurred far more frequently in white than in colored women. Dermoids were now more prone to undergo dangerous degeneration than formerly; hence their early removal was all the more to be urged from a pathological standpoint. The nature of the neoplasm determined whether or not an operation was justifiable. If the attending physician was not familiar with the history of the affection, he should supplement his knowledge by consultation. Tumors of the uterus, though small, might be dangerous on account of their shape, as they often assumed fantastic shapes, and thus attacked by pressure any organ in their vicinity—such as the kidney, bladder, or rectum—while in their general mass they might interfere with the pelvic circulation to a serious extent. As results of such pressure there might be much œdema and pain while the cause itself seemed altogether inadequate. Small tumors were easier to operate on and were less complicated. The greater the size of the tumor the longer the incision and the longer the operation. Large tumors often had extensive adhesions to the bowel, the omentum, and the parietal peritonæum. This, in small tumors, was the exception. Bowel repair and control of hæmorrhage in the pelvis were not simple work. If the tumor was allowed to go on to cystic degeneration or other malignant changes, the result of the operation was all the more serious. Rupture of the cyst might occur, with leakage, and set up general peritonitis, while the malignant element, if present, might invade the whole abdomen. In many cases of uterine fibroids the appendages also were diseased. The ovaries might degenerate into cystomata, while the tubes were also apt to be occluded, charged with some poisonous fluid, adherent, and deeply imbedded in the pelvis. In puerperal hysterectomy, the verdict of experienced operators was strongly against the intraperitoneal method. Yet some, especially among the Germans, insisted that this was the ideal method. Fortunately, it had been abandoned by experienced surgeons elsewhere than in Germany. Tait had expressed regret that he had ever been tempted to use it, and his opinion was sustained by Bantock and others whose successful work made the glory of English surgery. The extraperitoneal method in puerperal hysterectomy gave nearly perfect results. The method practiced by Tait, Bantock, and others was to secure the stump outside the abdominal wound by a serre-nœud. This was preferred because the stump was composed of contractile tissue, which, by its shrinkage when constricted as a whole, relaxed the pressure on the vessels and opened up the danger of fatal hæmorrhage. The extraperitoneal method was the only assurance against hæmorrhage.

The Kœberlé serre-nœud was the best of instruments of its kind when carefully applied to a well-made pedicle transfixed by two long pins before cutting away the tumor. The pedicle should be drawn firmly into the lower end of the incision, the parietal peritonæum stitched below the line, and the incision closed. The value of the elastic-ligature method lay in the fact that the ligature contracted upon the tissues as they shrank, and thus maintained a continuous contraction. Bantock and Keith preferred the serre-nœud. The consensus of opinion was in favor of Kœberlé's serre-nœud.

Among accidents following the operation there might be constriction of one or both ureters, constriction of a portion of the bladder, inclusion of a portion of the bowel in the serre-nœud, etc. The accidents might be avoided by incising the capsule high on the tumor—four to six inches above the bladder or below the tubal and ovarian attachments to the tumor. The capsule of the tumor should be retracted to the surgical neck of the uterus or to the circumference of the internal os. The pedicle should consist of cervical tissue only—small, reduced, and carefully constricted. The risks of hæmorrhage, sloughs, and suppuration above the pedicle were minimized by making a small pedicle, well placed in the lower angle of the incision. To apply the serre-nœud about the base of the large irregular tumor without first making a pedicle was dangerous. Drainage should always be used where there were extensive adhesions or pathological changes due to pressure. The tubes should be kept dry and clean. Three or four stitches should be used between the tube and the pedicle. In the after-treatment, dry dressings gave the best results, and they need not be changed for ten or twelve days. Silkworm gut was the strongest, smallest, cleanest, least irritating, and most reliable of the suture materials. Recumbency should be maintained for six or eight weeks to favor organization and consolidation along the incision.

The author closed by referring to the frequency of insanity following hysterectomies, ovariotomies, etc., but said it must not be forgotten that as many if not more cases of insanity were cured by the operations.

The Continued Administration of Digitalis, illustrated by the Report of a Case.—Dr. F. M. Brooks, of Fairfax Station, read a paper on this subject. The points of interest in the case were the long-continued use of the drug—from November, 1889, to September, 1892, and the size of the dose—thirty-five drops three times daily.

Book Notices.

Geographical Pathology: an Inquiry into the Geographical Distribution of Infective and Climatic Diseases. By Andrew Davidson, M. D., F. R. C. P. Ed., late Visiting and Superintendent Surgeon, Civil Hospital, and Professor of Chemistry, Royal College, Mauritius. Part I. Europe, Northern and Western Asia, India, Ceylon, Burmah. Part II. Southwestern Asia, Indian Archipelago, Australia and Polynesia, Africa, America. New York: D. Appleton & Co., 1892. Pp. xiii to 1005. [Price, $7.50.]

The facts that Hirsch's *Hand-book of Geographical Pathology* is only obtainable in English by those who have been subscribers to the New Sydenham Society's publications, and that the peer of that work, Lombard's *Traité de climatologie*, can only be obtained in French, make this work a desirable addition to the literature of this subject. Furthermore, the last edition of Hirsch appeared in 1881–'83, and that of Lombard in 1877–'80, so a recent work could include the results of improved methods of sanitation in various countries since the more recent of the above mentioned dates. The recognition of the necessity of collecting vital statistics has become much more general during the decade including 1890, and the methods employed for this collecting have been improved. Better equipped medical men, improved methods for securing accuracy in diagnosis, and the additions to our knowledge of the ætiology of disease tend to decrease the factor of error in statistics due to the personal equation.

We are therefore surprised that the author, who dates his preface January, 1892, has few statistics later than 1887. For England we should have expected the tables to cover the years 1881–'90, if not 1882–'91, whereas, as a rule, they include only the quinquennium 1883–'87. While this fact does not detract from the value of the book, it has not allowed the author to take advantage of the most recent information.

The objects of such a work as this are, as stated by the author, to sketch the geographical distribution of infective and climatic diseases, tracing the influence of temperature, rainfall, altitude, and soil conditions on their prevalence, character, and epidemic spread. To the health officer such knowledge is most important, indicating as it does the results attained in other countries by sanitary effort, as well as showing those countries from which emigration would threaten the health of the community under his care. To the physician the knowledge of localities to which chronic or convalescent patients could be sent to their best advantage is a matter of daily utility.

The rarity of cancer in Africa, Iceland, India, Jamaica, Mauritius, New Caledonia, and Persia suggests a more careful study of those localities for the purpose of verifying former reports, as well as for determining what are the reasons for this rarity.

To-day, while we are so much interested in the question of the dissemination of cholera, it is interesting to note that Australia, which is within easy and frequent communication with India, has escaped a cholera epidemic. The Bermudas, the south and west coasts of Africa, the Hebrides, and the Shetland and Orkney islands have also escaped. But it seems singular that the author should state that Chile had hitherto escaped cholera when there was a severe epidemic of the disease in that country in 1887. In the general review of this disease the question is discussed as if the cause of cholera was yet unknown.

The fact that hepatitis is more common in the less malarious region of Italy is not in accordance with its general distribution in all malarial countries in which there is a long season of warm weather.

One congratulates the inhabitants of Bolivia, Quito, the Kirghiz Steppe, and Nijhi Kolimsk on their freedom from tuberculosis, that occurs in all other known portions of the world.

It has not been the experience of the United States that yellow fever is limited in respect to the distance inland to which it extends. That it has disappeared from our Southern States as a result of strict quarantine regulations is a fact that has converted those who formerly held to the theory that it was there an indigenous disease.

It would have been, we think, a better arrangement for the author to have a special chapter in which he summarized the various infectious diseases, instead of including the summary of beriberi in the chapter on Borneo, that of cholera in the chapter on India, that of dysentery in the chapter on Africa, that of influenza in the chapter on Brazil, that of phthisis in the chapter on the United States, and that of syphilis in the chapter on South American countries. We hope that he will make such an arrangement in the next edition of his work, and also introduce tables that will show the comparative mortality in different countries from scarlet fever, whooping-cough, measles, diphtheria, small-pox, and the other infectious diseases that have a large percentage in the mortality statistics of most countries.

Dr. Davidson's book deserves liberal patronage by the profession, and the information it contains can only be obtained elsewhere by those having access to large collections of health reports.

A Dictionary of Psychological Medicine, giving the Definition, Etymology, and Synonyms of the Terms used in Medical Psychology, with the Symptoms, Treatment, and Pathology of Insanity, and the Law of Lunacy in Great Britain and Ireland. Edited by D. Hack Tuke, M. D., LL. D., Examiner in Mental Physiology in the University of London, etc. Vol. I. Pp. xv–722. Vol. II. Pp. 723–1477. Philadelphia: P. Blakiston, Son, & Co. 1892. [Price, $13.]

The editor states that he has attempted in this, the first work of the kind, to provide more or less systematic information in regard to the definition, etymology, and synonyms of the terms used in medical psychology, together with the symptoms, treatment, and pathology of insanity, and with an abstract of the law of lunacy in Great Britain and Ireland. From this plan it may be seen that the work is more of the nature of an encyclopædia than of a dictionary, while its fundamental aim is directed to morbid psychology rather than to mental science in a restricted sense.

The editor has prefaced the work with an historical sketch of the insane from ancient times to the early part of this century, and with an excellent article by Dr. W. C. Coupland on the philosophy of the mind. Following these comes the work proper, and not only are the subjects arranged in alphabetical order, but at the end of the second volume there is an index to assist any one to whom the major heading of a matter regarding which he desires information may not at once occur. While the subject matter of the volumes is furnished with cross-references, very often the student's time is spared by giving a definition both under a major heading and in the alphabetical place in the volume. For example, affective insanity is defined under the heading "affective," as well as under "insanity"; this has seemed to us like refining pure gold, as a definition should be sought for under the noun rather than the qualifying adjective. Again, we find such terms as "abomination," "agony," "agreement," etc., defined, although they have no signification when used in psychiatry that does not pertain to their every-day meaning.

An idea of the thoroughness with which the editor has discharged his duty may be obtained by the articles under "Brain." Dr. Thudichum has written on the chemistry and specific gravity, Dr. Beevor on the physiology, Dr. Clapham on the weight of the brain in the insane, and Dr. A. Bruce on the anatomy of the membranes of the brain. A. Wood Renton, Esq., has written the majority of the articles on the legal features of insanity.

We are surprised to note the omission of Krafft-Ebing's classification of mental diseases in the article on that subject. The editor's article on paranoia, though showing his familiarity with the subject, does not treat of that topic so extensively as we should have expected. He justly objects to the employment of the term in nosology.

The article on "general paralysis," that is inserted under "general," and not even given a subheading under "paralysis," was written by Dr. W. Julius Mickle.

We have noted a few typographical errors. *Agrypnia pertæsa* should read *agrypnia pertæsa; ærophobia, aerophobia;*

anasarca hystericum, a. hysterica ; and ephialtes hypochondriaca, ephialtes hypochondriacus. There are some omissions, such as acinesia, astrophobia, duræmatoma, cursatory impulse, etc. We notice that the editor usually employs the Latin termination *-ia*, as in antipathia, for the English termination *-y*, and this, we think, is to be commended.

It may be said of these volumes that they comprise, on the whole, such a work as might be expected from so able an alienist as Dr. Tuke. He has selected his collaborators with care; their work has been as thoroughly done as was compatible with brevity, and the volumes constitute a valuable addition to the literature of the subject.

A Dictionary of Terms used in Medicine and the Collateral Sciences. By the late Richard D. Hoblyn, M. A. Oxon. Twelfth Edition. Revised throughout with Numerous Additions by John A. P. Price, B. A., M. D. Oxon., Assistant Surgeon to the Royal Berkshire Hospital, etc. London: Whittaker & Co. (New York: Macmillan & Co.), 1892. [Price, $2.25.]

The number of editions that this dictionary has passed through is evidence of the satisfactory work that was originally put into its construction. In this edition the editor states that he has mainly confined himself to making additions.

It seems to us that any work of this kind that presents itself for professional patronage to-day should, first of all, give the correct pronunciation of words, and, secondly, give as complete a list of words in use as is possible.

The editor has made no effort to indicate the pronunciation beyond placing an accent mark, and his erroneous manner of syllabifying would often give an American student an erroneous impression of the quantity of the vowel sounds; as, for example, aga'ricus, æsthe'tica, ætio'logy, ægo'phony, a'fferent. Occasionally words are unaccented, such as agar-agar, ainhum, ptisan, ptomaines, taurocholic, and tomentose.

That the editor has not cónsulted all authorities, so as to make his omissions as few as possible, is shown by the omission, under the letter a, of *abasia*, *ablepharon*, *aboulomania*, *abrachia*, *abrus*, *abulia*, *acacia*, *acheilia*, *acheiria*, *achymosis*, *achylosis*, *acleitocardia*, *acœlius*, *acomia*, *acrania*, *acrocinesis*, *acronyx*, *adiaphoresis*, *adiapneustia*, *adiathesia*, *aerophobia*, *aeroscope*, *æsthesodic*, *ageusia*, *aglossia*, *akanthæsthesia*, *akataphasia*, *akinesis*, *albumose*, *allochiria*, *amelia*, *amenomania*, *anaerobic*, *anarthria*, *angeioneurosis*, *anthropophobia*, *appendicitis*, *apraxia*, *astasia*, *astrapophobia*, *athelasmus*, *atopomenorrhœa*, *atrophoderma*, *audiometer*, *auto-inoculation*, *auto-intoxication*, *autophagy*, and *auxocardia*. While such more or less important terms as these are omitted, we find words that have no distinctive medical signification introduced, such as *abstemiousness*, *abstinence*, *accidental*, *acquisitiveness*, *adhesiveness*, *aerostatic press*, *aerostatic steam engine*, *amativeness*, and *approbation*. Some of these are introduced on account of their phrenological signification, though this is no more pertinent to medicine or the medical literature of to-day than astrology or rosicrucianism is.

Under æsthesia, anæsthesia and dysæsthesia are given as subheadings and are defined, though again given, with definitions, in the major portion of the work. Under articulation, this procedure is repeated with ginglymus, etc.

It would seem that a person desirous of looking up angular aperture, angular motion, animal charcoal, and animal magnetism, would be more likely to hunt for the definition under the noun than under the adjective.

Occasionally a definition is insufficient; that of *attenuation* does not explain the word as used by bacteriologists. Under *bacillus*, the comma bacillus is not mentioned, and there is no cross-reference to indicate that it is defined as *Spirillum choleræ asiaticæ*. The Latin root of *castration* means to deprive either a male or female of generative power, and the word is so employed to-day instead of being restricted to excision of the testes, as here defined. And *acatalepsy* denotes mental uncertainty rather than "inability to diagnose [*sic*] accurately any disease."

Books, perhaps, more than men, outlive their usefulness, as we believe the facts we have mentioned indicate regarding this work. We believe the editor would find it an easier task to write a new dictionary than to attempt to bring this work up to date.

Book on the Physician Himself and Things that concern his Reputation and Success. By D. W. Cathell, M. D., Baltimore, Md. Tenth Edition. Carefully revised and greatly enlarged. (Author's Final Revision.) Philadelphia and London: The F. A. Davis Company, 1892. Pp. 343.

We have mentioned former editions of this work, and there is nothing in the tenth edition that demands further notice. The number of editions through which the book has passed testifies to the interest that many physicians have felt for a knowledge of all the things that may contribute to their success.

Miscellany.

The Guggenheim Affair.—In a letter dated August 26th, addressed to Dr. George Henry Fox, the president of the Medical Society of the County of New York, Mr. W. A. Purrington, the society's counsel, said:

"You may remember that Guggenheim is the man who registered here on June 3, 1890, on a forged Basel diploma dated 1884 which he had indorsed by Bellevue through false representations. He was arrested in July, 1890, on a charge of perjury in securing registration and also for practicing medicine illegally. He forfeited his bail in September, 1890, and went, as we afterward learned, to Cincinnati, where he practiced under the Basel forgery. I learned of his whereabouts and an officer had started for Cincinnati to bring him back when he fled, he having been [informed ?] by the newspapers there. He went to Philadelphia, whence he was extradited in December, 1891, and in March, 1892, was convicted on the charge of illegal practice and sentenced by Recorder Smyth to pay a fine of $100 and undergo 200 days' imprisonment. He is still in the penitentiary and the perjury charge is still pending. Guggenheim had also registered in Paterson and Newark on a bogus diploma purporting to be from Würzburg.

"In 1885 Guggenheim was arrested for illegal practice, and then, a year after the time he says he received his diploma from Basel, he declared that he was not a physician, but a correspondent for a Zurich medical journal. His prospective father-in-law gave bail for him, which Guggenheim promptly forfeited. He was again arrested in 1888 on two charges of illegal practice, pleaded guilty, and was fined $150. He said nothing of his diploma then. This, I think, gives pretty fully the career of Mr. Guggenheim as it appears on our records."

Mr. Purrington inclosed the following communication from the Swiss chargé d'affaires:

"Légation de Suisse aux États-Unis,
"Washington, D. C., *12 August, 1892.*

"*W. A. Purrington, Esq., Counsel of the Medical Society of the County of New York, New York City.*

"Dear Sir: Referring to your favor of June 14th and the answer of this legation of June 20th in regard to the forged diploma of a certain Guggenheim, I have the honor to again apply to your kindness in this matter.

"As Minister de Claparède stated, he forwarded to our Government for transmission to the University of Bâle the valuable informations contained in your letter. The Faculty of Medecine of Bâle has thereupon decided that, since Guggenheim is already known as having been prosecuted and convicted under the charge of illegal practice of medicine, they will renounce any further action against Guggenheim because of the forged diploma. It is of less importance for the faculty to get possession of this forged diploma than to know where and by which printer the same was forged.

"However, as Guggenheim misused and still misuses the name of Professor Dr. Immermann, claiming, even in presence of our Consul at New York, that he received his diploma from said professor and that he paid the fees of 650 francs, the Faculty of Medecine of Bâle wishes that a declaration might be published in a medical paper which will be deemed the best for this purpose.

"I therefore, and by order of my Government, have the honor to apply to you, begging you might transmit to the President of the Medical Society of the County of New York the inclosed declaration of the Faculty of Medecine of Bâle, and request the same to publish it in a proper medical paper.

. . . .

"Expressing to you my best thanks in advance for your interference in this matter and awaiting a kind answer, I have the honor to remain, dear sir,

"Very respectfully yours,
"Charles C. Tavel,
"*Swiss Chargé d'Affaires ad int.*"

The following translation of the Basel faculty's statement was inclosed in Mr. Tavel's letter:

"The Faculty of Medecine of the Swiss University of Bâle hereby certifies that neither the faculty nor any member of the same ever delivered a diploma of Doctor Medicinæ to Mr. *Guggenheim*; the same faculty gives such diplomas exclusively to candidates who are entitled to it by successful examinations before the faculty or who successfully have submitted themselves to the official Federal examination and printed a thesis accepted by the faculty. Professor Dr. Roth was chairman of the faculty in the year 1884, not Professor Dr. Immermann; Professor Dr. Albert Teichmann was Rector of the University for the year 1884.

"The faculty states also that they never delivered a diploma to Mr. *Diedrich*, at Portland, Ore.

"The Faculty of Medecine.
"By order:
"(Sig.) Massini, *Chairman.*
"Bâle (Switzerland), *July 21, 1892.*"

Buffalo Lithia Water in the Treatment of Renal Calculi.—Dr. Albert Goodwin, of Eufaula, Ala., states that for a number of years he has prescribed Buffalo lithia water, with uniformly efficacious results, in gout, rheumatic gout, rheumatism, and all diseases of a uric-acid diathesis, and its extraordinary therapeutic value prompts him to report the following cases of renal calculi dependent upon a uric-acid diathesis relieved by its use after the failure of other approved treatment:

J. N. L., a cotton merchant, between forty-five and fifty years of age, was subject for six or seven years to frequent attacks of nephritic colic, and almost invariably passed a calculus after each paroxysm. The paroxysms finally became so frequent that the colic was almost constantly present, rendering his existence miserable. Of necessity, resort was had to opium and other anodynes, with a view to mitigating his intense suffering, until he became a confirmed victim of the morphine habit. His nervous system was shattered, and he was indeed a mere wreck. In this condition, by Dr. Goodwin's advice, he visited the Buffalo Lithia Springs, Virginia. For several months previous there had been a continuous pain in the right kidney, caused, as Dr. Goodwin thought, by retained calculi or incrustations in the pelvis of the kidney.

After a few weeks' use of the water of spring No. 2 the beneficial results were very marked, the paroxysms became less frequent and of less severity, and there commenced a free discharge of calculi and sand, which continued for some three weeks, gradually diminishing and finally ceasing altogether. This was followed by rapid improvement in his general condition, and some weeks afterward he returned home in full and vigorous health, having gained while at the springs forty pounds in weight. By the continued use of the water after returning to his home he was enabled to overcome the morphine habit entirely and lived for some years, having no return of his old disease.

This water proved not less efficacious in a similar case in Dr. Goodwin's own person. In October, 1890, he was attacked with nephritic colic of the severest type. Within a period of seven or eight weeks he had from fifteen to twenty paroxysms, none of them lasting less than two hours, and most of them from six to fourteen. The free and continued use of Buffalo lithia water resulted in a total cessation of the attacks and the restoration of his general health, which had been much impaired. There has been no return of the attacks up to this date—August 15, 1892. He has prescribed this water in other similar cases with decidedly beneficial results, and has no hesitation in saying that as a remedy in such cases it has no equal among the medicines or mineral waters of which he has any knowledge. It is especially adapted, he says, to cases in men who are broken down by the long and continued use of alcohol and opium in their various forms.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and n new conditions can be considered after the manuscript has been pu into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

Original Communications.

AN UNDESCRIBED VARIETY OF HEREDITARY ŒDEMA.*

By W. F. MILROY, M. D.,

PROFESSOR OF CLINICAL MEDICINE AND HYGIENE IN THE OMAHA MEDICAL COLLEGE; PHYSICIAN TO IMMANUEL HOSPITAL, ETC.

ON August 20, 1891, Mr. H. presented himself for examination for life insurance. He was an American, a clergyman, thirty-one years of age, six feet and half an inch in height, and weighed one hundred and seventy-eight pounds. His habits were the best, and he had never been sick in his life. With respect to longevity, his family history was excellent. Physical examination revealed nothing abnormal with regard to the thoracic or abdominal viscera. The applicant called my attention to his lower extremities. I found a condition of œdema involving the feet and extending up the legs to the knees. It was, and the patient states had always been, somewhat more marked in the left extremity than in the right. Upon inspection, the leg presented a slightly rosy hue, extending around its whole circumference and involving the whole extremity, gradually disappearing near the knee. When lightly pressed, the color disappeared, but returned quickly when the pressure was removed. Scattered thickly over this base were white spots about the size of a pea. These also were found over every part of the leg as far as the rosy color extended. This appearance of the leg, according to the statement of the applicant, is constant. There were no varicose veins and no evidence of bad nutrition, nor was there any tendency to ulceration in any part of the leg. The circumference of the calf of the leg at its largest part was seventeen inches, and the smallest circumference of the ankle was fourteen inches. Deep pressure with the finger over the crest of the tibia, at a point near its middle, produced a depression which was distinctly apparent to both touch and sight ten minutes after the pressure was removed. This will convey an idea of the well-marked character of the œdema. The pitting on pressure was quite evident as far up as the tubercle of the tibia, but not over the patella or above it. Mr. H. stated that this œdematous enlargement had existed from birth. As he had grown in stature, the œdematous parts had grown so as to preserve the same size relative to the remainder of the body. It had always been free from pain, showed no disposition to ulcerate, and, in short, had never given him the least inconvenience. In the evening, if he had been on his feet a good deal during the day, the swelling seemed somewhat greater than in the morning, the skin appearing rather tense.

The applicant stated that this enlargement of the extremities was a family characteristic which he had inherited from his mother. Fortunately for the purposes of this study, the family of Mr. H.'s mother is one which has been long in America, and has been productive in New England. In 1883 a member of the family published a neat volume, giving the family history in America for a period of two hundred and fifty years. It should be remarked, however, that the peculiarity now under discussion seems to have entered the family by marriage about 1768. With the aid of this volume and the assistance of members of the family still living, I am able to offer the facts which I present, feeling that they are thoroughly reliable, though not at every point as complete as could be desired. For convenience I present, in graphic form, a summary of the family history, indicating in which individuals the œdema has occurred:

GENEALOGICAL TABLE SHOWING HEREDITARY ŒDEMA IN THE FAMILY OF W.

I.	II.	III.	IV.	V.	VI.
A relative of Mrs. W. had one enlarged leg.	Joseph W., both legs enlarged.	1. *James.* Unknown.			
		2. *Lydia.* One enlarged leg.	Six children. Three have each one enlarged foot.	Eleven children. Two have each one enlarged foot.	
		3. *Sarah.* Normal.	Eight children. One enlarged foot.	Nine children. All normal.	
		4. *Martha.* One leg enlarged.			
		5. *Olive.* Normal.	Five children. One enlarged leg.	Nine children. One has both legs enlarged; one has one foot enlarged.	
		6. *Charity.* Both legs enlarged.	Four children. One enlarged leg.	Four children. One enlarged foot.	Six children. One has one foot enlarged; one has both feet enlarged.
		7. *Sally.* One foot and ankle enlarged.	Three children. One enlarged foot.	Two children. Normal.	
		8. *Mary.* Unknown.			
		9. *Julia.* One foot and leg enlarged.	Four children. One (the applicant), both legs enlarged.	Thirteen children. Normal.	Two children. Normal.

First Generation.—In 1768 Benjamin W. married Olive S. They were both physically normal, but a near relative (probably a sister) of Mrs. W. had an enlarged leg.

Second Generation.—Joseph W., son of Benjamin, was born in 1784, and died, at the age of seventy-eight years, of typhoid fever. He had both legs enormously enlarged.

Third Generation.—Joseph was twice married and had nine children, as follows:

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* Read before the Society of the Alumni of Charity Hospital, June 1, 1892.

1. James died at the age of four years, and no information has been able to be obtained in regard to him.

2. Lydia is still living at the age of eighty-two. She has one leg enlarged.

3. Sarah is also living, aged eighty. Her extremities are normal.

4. Twin birth. Martha, who died in infancy, had one leg enlarged. Olive died of "jungle fever" in India at the age of thirty-eight. Both of her extremities were normal.

5. Charity is living at the age of seventy-five. She was born with one enlarged foot. When between twenty and thirty years of age she was thrown from a carriage, sustaining an injury in the sound leg. The injury was recovered from without special difficulty, but the leg gradually enlarged from that time until it reached enormous proportions. It has never given her the slightest inconvenience. She has through all her life enjoyed excellent health, and her extraordinary activity has always been a source of wonder to her friends.

6. Sally is living, aged seventy-three. She has one enlarged foot and ankle.

7. Mary died when a young child, and no information has been obtained in regard to her.

8. Julia is living at the age of sixty-six. Both extremities were normal until she was twelve years old. At that time one ankle had the appearance of having been sprained, though she was not aware of having thus injured it. For several weeks she could not walk on account of the distress in this ankle. The lameness was recovered from, though the swelling never disappeared, but, on the contrary, increased as she grew until it involved the foot and leg. It has never caused her any inconvenience since the time mentioned, when she was twelve years of age. The other leg has remained normal.

Fourth Generation.—Lydia, the second daughter, had six children. Of these, the three daughters are normal. The three sons have each one foot somewhat enlarged.

Sarah has had eight children, of whom three are living. They were all normal with the exception of one son, who has a large foot.

Olive has had five children, of whom the youngest has one enlarged leg, the remainder being normal.

Charity has four children. Three of these are normal. The other has one enlarged leg.

Sally has two daughters and a son, the former being normal. The son had one enlarged foot. When he reached maturity his testicles began to enlarge, and this progressed to such a degree that he had one of them removed. As the enlargement of the testicles increased, that of the foot diminished until it was reduced to normal size, and it has since remained normal.

Julia had three children by her first husband, all of whom are normal. By her second husband she has one son (the applicant), with both legs and feet greatly enlarged.

Fifth Generation.—Of the descendants of Lydia, there are in this generation eleven children, of whom nine are normal. The remaining two, a son and a daughter, have each an enlarged foot.

Sarah has nine grandchildren, all normal.

Olive has nine grandchildren. A son of her eldest daughter has both legs enlarged, and a son of her eldest son has one foot enlarged. The others are normal.

Charity has three grandsons and one granddaughter. One of the sons has one enlarged foot. The remainder are normal.

Sally has two grandchildren, both normal. One of these is a son of the individual who had the testicle removed, as already referred to.

Julia has had thirteen grandchildren, all normal.

Sixth Generation.—Of the three grandsons of Charity mentioned, the eldest has three children, all normal. The youngest has also three children, of whom the eldest, a son, has one enlarged foot; and the youngest, a daughter, has both feet enlarged.

Of the descendants of Julia, there are in this generation two children, both normal.

It thus appears that in the six generations of the family, comprising ninety-seven individuals, there have been twenty-two cases of this deformity, or about twenty-three per cent. of the whole number. Of the twenty-two cases, twelve were males, seven females, and three unknown, appearing to show that it is rather more common among the males than females of the family. In the later generations the percentage of cases is about as large as in the earlier, but there is a decided decrease in the extent of the œdema in most of them.

Atavism is frequently apparent in the development of the family peculiarity. I have not been able to learn that treatment has been undertaken for the cure of the affection in any case.

The invariable characteristics of the disorder have been: (1) Congenital origin with a steady growth corresponding to the normal growth of the body until adult size is attained; (2) the limitation of the œdema to one or both lower extremities, the area involved varying; (3) permanence of the œdema; and (4) entire absence of constitutional symptoms, or local symptoms aside from those described.

Three exceptions to the usual course appear. The first of these is the case of Charity in the third generation. Having been born with one enlarged foot, its growth was characterized by the usual phenomena until she reached adult age. When above twenty years old she was thrown from a carriage, sustaining an injury in the sound leg. The immediate effects of the injury passed away within a reasonable time, but from this date the leg began to enlarge and continued to do so until it had attained enormous size, but, at the same time, in no wise interfering with the health or activity of the individual.

The second exception is the case of Julia, also in the third generation. At birth and until she was twelve years of age her extremities were normal. Then, being unaware of having sustained any injury, one of her ankles developed the appearance of having been sprained. The usual signs of a sprain, including pain, tenderness, and swelling, were present to such a degree as to disable her for a number of weeks. Gradually all of the symptoms subsided with the exception of the swelling, and this increased and extended until it involved the foot and leg. It still remains, but never again has it given her any inconvenience.

The third exception, and the most remarkable, is that of a male in the fourth generation. Born with one enlarged foot, this grew in the usual manner until he arrived at maturity. Enlargement of the testicles then began and continued until they were so large that it was thought best to remove one of them, and this was done. As the enlargement of the testicles progressed, the abnormal size of the foot diminished until it became normal, and the enlargement has never returned. Unfortunately, the surgeon is dead who performed the castration, and I have been unable to obtain satisfactory information in regard to this most remarkable case. It is a question whether the enlargement of the testicle bore any particular relation to the family peculiarity, this not having occurred, so far as I am aware, in any other member of the family. But the fact remains that no other instance is known in which the œdema disappeared even temporarily.

The newness of the city and consequent dearth of medical libraries in Omaha is a serious obstacle in the way of the study of pathological and other questions here, and inasmuch as the literature at my command furnished no aid to an understanding of this case, I wrote an incomplete account of it to Professor Francis Delafield, of New York, and also to Professor William H. Welch, of Baltimore, and I shall take the liberty to quote from these eminent authorities. In his reply Professor Welch says: "The case described in your letter is of extreme interest, and I do not know of one altogether like it recorded in literature. I should be inclined to put it in the category of angeio-neurotic œdemas. The congenital character of the affection and the existence of a similar condition in other members of the family, and the absence of any of the ordinary causes of œdema, speak for this view." Professor Delafield, whose reply was delayed for some time, says: "I have put off answering your letter of August 11th until this late date with the hope that I might be able to give you some information concerning your very interesting case of dropsy. I have found no reports of identical cases." He offered no suggestion as to the nature of the disorder.

I am indebted to Professor Welch for reference to a paper by Professor William Osler upon the subject of Angeio-neurotic Œdema. This was published in the *American Journal of the Medical Sciences* in April, 1888. Professor Welch also stated that he had shown my account of the case to Professor Osler, who concurred in the opinion that the case is one of angeio-neurotic œdema.

Angeio-neurotic œdema is a form of disease which is not so much as mentioned in any text-book or encyclopædia that I have been able to find in Omaha. Most of my information upon the subject I have obtained from the paper of Professor Osler already referred to, which contains, besides an account of his own cases, references to the very limited literature of the subject. A sufficient number of cases have been reported by different writers to show that it is not very uncommon.

Professor Osler describes the attack in one of his cases, that of Mrs. H., as follows:

> "As long as she can remember she has been subject to attacks of transient swelling in various parts—hands or fingers, knee-caps, elbows, buttocks, arm or thigh in fleshy parts, face, or more often the lips alone. The fingers have been so swollen that it was impossible to move them, and once the ring finger was so greatly enlarged that the ring had to be filed off to prevent gangrene. The under lip has been swollen to such a degree that the mouth could not be opened and milk had to be poured in from above. A slight redness or itching of the part is first noticed, or a sensation of heat; the redness is not always present. The effusion may take place with great rapidity. She often has red spots on various parts of the skin or irregular lines of redness without any swelling. The duration varies from one to four days. There is not much itching, particularly when the swelling is great, but a sense of distention and stiffness. When fully *out* it does not pit, but does so when going down. The attack may come on when she is feeling quite well, or there may be slight indisposition. In all the severer ones there is abdominal pain, described as colic, with nausea and often vomiting. There is sometimes headache; no fever. The attacks have no relation to the menstrual flow. She rarely passes two weeks without an attack. She does not think that food has any influence on her case."

This case is related as giving a fair idea of the character of the disorder, and Dr. Osler states that a review of the literature shows that all of the cases, in respect to their symptoms and course, are very similar. The hereditary tendency Osler found mentioned by three observers, and it was very marked in the family studied by himself. The most distressing symptom, in most of the cases, is the intestinal colic, which is so severe as to demand the administration of morphine.

Urticaria, which is a skin disease of neurotic origin, has been so often found to precede or accompany the attacks of œdema that it is evident there is a close relationship between them. In speaking of the case to Dr. Gifford, he called my attention to the fact that there are certain subjects in whom an œdematous condition of the eyelids occurs without congestion. These attacks are transient, and are provoked by a more or less severe use of the eyes.

Quincke is the author of the term "angeio-neurotic œdema," basing the name upon the theory that the disease is a vaso-motor neurosis by means of which the permeability of the vessels is suddenly increased. However, in his letter, to which I have referred, Professor Welch says: "As to the pathology of angeio-neurotic œdema we know nothing. Even our knowledge of the physiology of the vaso-motor nerves does not explain how they could be disordered so as to cause œdema."

When the subject was first brought to my notice it occurred to me, as a possible explanation, that there might be a congenital absence of valves from the veins of the part affected. I was not aware that such an abnormity had ever been described, and have not since been able to learn that it has been known to exist. If it did exist, I do not know that it would cause œdema, and, indeed, a more perfect knowledge of the family history brings to light certain facts that seem at first glance, at least, not readily to harmonize with this theory.

There is, in my judgment, no pathological condition with which we are acquainted to which the case which I have related corresponds in a greater degree than what is known as angeio-neurotic œdema. Nevertheless, in most of the fundamental characteristics they are dissimilar.

Professor Osler says: "Briefly summarized, the affection in the family which I have studied has the following characteristics:

"1. The occurrence of local swellings in various parts of the body, face, hands, arms, legs, genitals, buttocks, and throat. In one instance, possibly in two, death resulted from a sudden *œdema glottidis*.

"2. Associated with the œdema there is almost invariably gastro-intestinal disturbance, colic, nausea, vomiting, and sometimes diarrhœa.

"3. A strongly marked hereditary disposition, the disease having affected members of the family in five generations."

On the contrary, and strongly in contrast with this disorder in the family which I have studied:

1. So far as known, in every case, with two exceptions only, the œdema was present at birth.

2. The location of the œdema has in every case been limited to one or both lower extremities.

3. The presence of the œdema is persistent, never having been known to disappear, temporarily or permanently, except in one instance.

4. It has never been attended by constitutional symptoms, barring the two possible exceptional cases in which its first appearance was subsequent to birth.

From these considerations it seems evident that the case under discussion is not one of angeio-neurotic œdema, nor would it seem probable from the history that any functional neurosis could be responsible for the œdema.

It is proper to say in this connection that the account of the case upon which Professor Welch based his suggestion as to diagnosis was too fragmentary to admit a fair judgment of it.

Inasmuch as we know nothing as to the pathology of angeio-neurotic œdema, it may be possible that a correct elucidation of its nature would show that the case in question belongs in the same category.

The nature of the primary influences which control the process of transudation is still the subject of dispute among pathologists. That the influence of the nervous system is important, at least in certain cases, is not denied. Nevertheless, we are still in so great ignorance of the matter that a discussion of it can give little result of value. In his work on *General Pathology* Payne remarks: "Dropsy of nervous origin is caused by paralysis of the vaso-motor nerves, causing hyperæmia, which, in combination with some obscure factor, leads to effusion." In the case which I have narrated the "obscure factor" appears to be very conspicuous. Whether or not the case is one of nervous œdema, it is offered that, with others, sufficient material may be accumulated to render possible an intelligent study of these unusual forms of œdema.

AN ELIGIBLE METHOD OF REPAIRING A BROKEN NOSE.*

By W. H. DALY, M. D.,
PITTSBURGH, PA.

OUR prevailing national custom of athletic sports, such as foot-ball and other games quite as rough in possibilities, has brought with it also concomitant evils, and among them frequently are fractures of the nose, and it is upon the subject of repairing satisfactorily and readily the serious deformity that may result that I would speak to you, and through you to the general practitioner, to whom a large proportion of these cases come primarily.

This is all the more necessary as the surgical text-books are singularly at fault in teaching any method of dressing fractures of the ossa nasi that will insure good results and freedom from nasal stenosis.

With scarcely an exception, the text-books recommend the application of adhesive plaster directly across the surface of the nose and cheeks, and general practitioners, so far as I have observed their dressings, follow these obsolete teachings, with the consequence of not only external deformity, but obstruction to breathing through the nose and consequent discomfort and disadvantage to the patient.

Since the foot-ball craze has seized the student youth of the land and slugging qualifications have become so important a part of the unwritten curriculum of our colleges and universities, I have had more frequently than formerly cases of recently broken nose to put in repair, and, although nearly all of these cases had been dressed by practitioners of justly acknowledged skill, yet not a single case was without serious deformity, such as depression of the nasal bones and flattening of the nose by the compression from the adhesive plaster.

There are no cases of fracture that require more constant vigilance than fractures of the ossa nasi in order to secure good results, and there is no facial organ where a slight deformity disfigures the expression of the face so much.

The nose, besides giving character, beauty, and expression to the face, has its most important function in supplying a free and suitable passage for air to pass to and from the lungs, thereby facilitating the important function of olfaction and oxygenation.

If we close the nasal passages we compel the individual to use the mouth entirely in respiration, and by so doing allow him to inspire irritants which, if the air was received through the nose, would be removed from it by the appliances which a kind Nature has placed there expressly for that purpose. This much goes without saying.

Besides the irritants we should breathe into our lungs, if compelled to use the mouth for ingress of air, we should also be compelled to inspire air, especially during winter and autumn, of a temperature entirely unsuited for the delicate lining of the air-cells. Not the least important objection to mouth-breathing is the inability to detect noxious gases which would be fatal to health and even life.

Now, a fractured nose, using the term generally, unless properly restored to its normal position, we know almost always causes some obstruction to normal nasal respiration. Hence it should be our chief object to establish a free inlet for air, not forgetting the cosmetic effects of such a restoration upon the human face.

Nasal obstruction of any kind, as is too well known to make it worth mentioning, always causes catarrh of some of the respiratory passages, and secondarily catarrh of the digestive tract.

What more miserable and uncomfortable looking and feeling object than the individual who suffers from chronic catarrh of all the mucous membranes? Granting this, should it not be one of the most important and charitable acts of the surgeon to restore the nose to its proper anatomical and consequently physiological condition after a fracture of the nasal bones?

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* Read before the American Laryngological Association at its fourteenth annual congress.

Besides the base-ball and foot-ball craze, the average American's hurry and bustle to get ahead of every one else causes him to sometimes put his nose in such a position as to make it liable to come to grief. The prominence of the nose upon the face also causes it to be far more liable to accident than any other feature; and if it were not for the elasticity of the nasal cartilages the nose would suffer far oftener than it does. These cartilages, by projecting out beyond the osseous part of the nose, act as buffers, as it were, to blows, which would otherwise do great damage to rigid resisting substance.

We must admit that the prevailing treatment of broken noses is lax. The methods employed are neither careful, rational, nor attended with surgeon-like results.

As I have said, the usual way of dressing a broken nose, according to the books, is by taking a broad piece of adhesive plaster and pasting it tightly over the nasal bridge from one cheek to the other. Of course, the surgeon has previously replaced all displaced fragments before applying the plaster. But without intranasal support is it not plain that the plaster, by its constant pressure, tends to again displace and depress the fragments, causing serious nasal obstruction and deformity? This dressing and its results I have observed more than once.

Since many of the standard authors of to-day teach that this is the best method of assisting Nature in repairing a broken nose, and since they also say that intranasal splints are intolerable to the patient, and that they are utterly useless, I feel called upon to answer that with aseptic precautions I have not found this to be the case, but quite the contrary; they are both tolerable and useful.

Does not the bridge-builder, in repairing a broken-down arch, put supports under it when he wants to restore the arch? If we grant this, then the average surgeon, who thinks he is not to follow mechanical laws but looks for something different from plain common-sense rules in his attempts to do anything in surgery, will make a mistake. We must not forget that we are to be mechanics besides being physicians, surgeons, anatomists, physiologists, etc. I say physicians advisedly, for a large proportion of the patients I have seen had their first dressings put on by physicians in general practice.

The teachings of the text-books are therefore, to my mind, so obviously wrong that I may be pardoned for quoting them at some length.

Professor Gross, in his work on Surgery, mentions a case four months after the sæptum was broken in which there was such encroachment upon the left nostril as to cause almost complete occlusion to respiration on that side, and he was compelled to cut away the whole of the offending part to afford relief, yet in the same volume we find the following:

"The best remedy is a stout adhesive strip carried across the bridge of the nose from one cheek to the other. The older surgeons were in the habit of counteracting this occurrence (displacement) by stuffing the nostrils with dossils of lint smeared with ointment, and frequently changed for the sake of cleanliness. Subsequently metallic tubes were recommended, and in modern times tubes of gum-elastic have been used. All such contrivances are now very properly dispensed with, or, if they are ever employed, it is in cases where it is impossible, in consequence of the manner in which the bones have been crushed, to remedy the displacement in any other way."

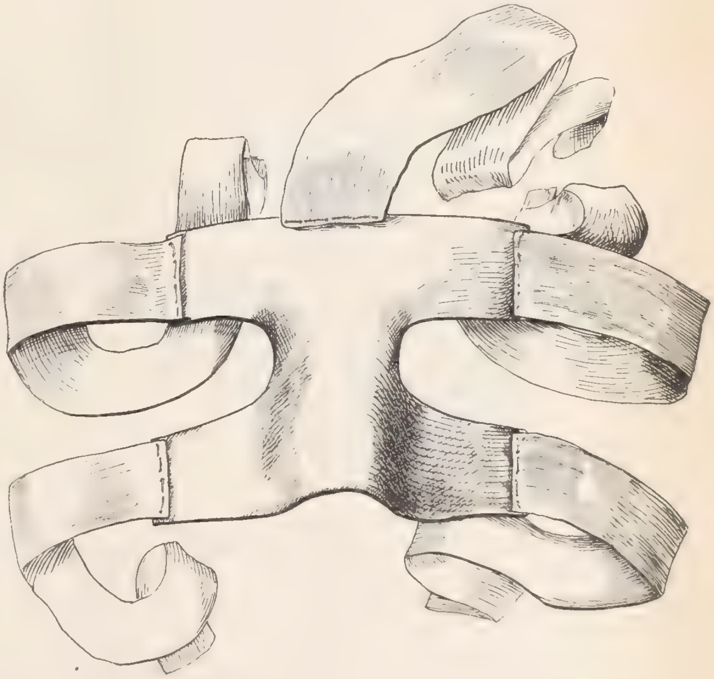
Now let me ask, Is it possible to keep the bones in apposition without internal support? This is a question that the modern rhinologist ought to answer negatively.

Morell Mackenzie, whom I regret to have it possible to quote in this manner, also says: "There is seldom, therefore, any necessity for splints or other supporting apparatus, which are, moreover, as a rule, intolerably irksome to the patent."

Bryant says: "Plugging of the nostrils is a useless practice."

Allow me to report a case from my note-books which will better illustrate my views on this subject, and is, clinically speaking, in the line of treatment followed which has proved entirely satisfactory to me in all of the cases of fracture of the ossa nasi that have fallen under my professional care.

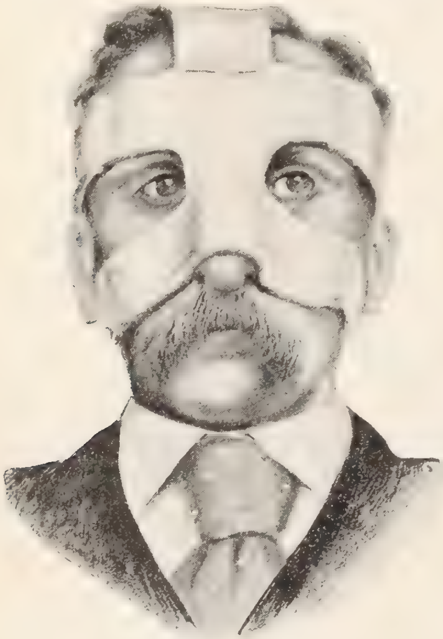
Case.—Mr. B., aged about thirty-four years, a fine specimen of manhood, was engaged in boxing with a companion and received a blow upon the nose which fractured both nasal bones and the vomer. The nose previous to the present accident was much flattened and considerably turned to the left from a badly adjusted previous fracture from a blow from a base-ball club.



His present fracture was dressed by a physician, who, in accordance with the standard text-book teachings, pasted a broad piece of adhesive plaster over the nose extending to either cheek. He was sent to me two days after, when I removed the plaster and adjusted the fragments as well as I could to their normal position, considerable tumefaction interfering somewhat. On the fourth day I had him lie down in my office, and taking a piece of felt from a white felt hat, I cut it into the shape of an X, making the arms of the letter long.

This I moistened and molded to the nose, forehead, and lower parts of cheeks, having the fragments properly adjusted. Then taking a piece of heavy sheet zinc, I cut it with strong scissors into the same shape, but smaller, and bent it to fit the curves of the forehead and nose. This I punctured around its border and sewed to the felt. I then took another piece of felt of the same shape as the first and applied it over the zinc. This I soaked in "soluble glass" (sodium silicate) and molded all snugly to nose, forehead, and face, holding it carefully in position until hardened.

To correct the deflection of the organ to the left, I made a small pad of felt and pasted it with liquid glass on the inner side of the splint, so as to bring pressure on the left nasal bone. The splint was now temporarily removed and the nose again examined, and, after washing out the nares with an antiseptic solution, I inserted into each naris a zinc plate, neatly covered with iodoform gauze, just large enough to fill the naris and hold the broken fragments up into place. These internal splints extended from the anterior openings back into the nasopharynx, after the manner of my friend, Dr. John O. Roe, of Rochester, N. Y., in his operation for restoring a deflected sæptum narium.



The external splint was held in position by adhesive straps extending around forehead and back over occiput and to cheeks from lower part of the nose, and brought together and secured at occiput. Another, carried vertically from a point between the eyes up over vertex and secured at the occiput, together with the other straps, completed the dressing. The patient was carefully watched and the nose examined and dressed every day for five weeks, when the patient was discharged. The intranasal splints were removed every third to fifth day and fresh ones inserted, insufflations of iodoform being made around splints every day.

Result.—The patient's nose recovered almost perfectly straight—an unusual condition even in so-called normal noses. The organ, it will be remembered, had been a year previously fractured by a blow from a base-ball club, and had resulted in a serious deflection to the left, with complete stenosis of left naris and partial stenosis of right naris. There is now no flattening or broadening of the nasal bridge, and the breathing capacity in both nares is all that can be desired.

The foregoing is so simple that every practitioner can have everything ready that is needed if he wishes, viz.:

1. A piece of a cast-off soft white felt hat.
2. A piece of heavy zinc or, better, light sheet iron to fortify the felt.
3. Some adhesive plaster.
4. A stout pair of scissors.
5. Iodoform gauze and cotton, with which to neatly cover and sew the former on the intranasal zinc splints.

The last item on the foregoing list is the most delicate as well as the most important.

In order to adjust the gauze-covered intranasal splints so as to give the minimum amount of inconvenience to the patient, a strong light is necessary to reveal the shape and size of the turbinates and their structure, which must be taken into full consideration and the intranasal splints cut and fitted accordingly, having the neatly made seam in the gauze on the splints soft and, to a certain extent, yielding or elastic, as the nasal mucous membrane does not so well tolerate inelastic pressure.

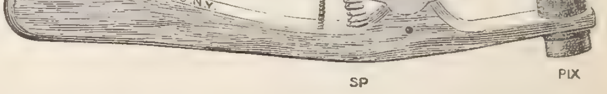
AN AUTOMATIC PLEXOR AND PLEXIMETER

FOR USE IN AUSCULTATORY PERCUSSION.

By J. WEST ROOSEVELT, M. D.

The instrument represented in the accompanying cut will, I think, be found of considerable use in ascertaining the size of viscera by auscultatory percussion. I may say that in 1881 I made an instrument embracing the distinctive features of this one, but found it of little use, because in it no provision was made for the hammer to spring back after delivering the blow. The instrument now presented has not this imperfection, and is also much simpler in construction than the original one.

It consists of a piece of hard wood of convenient size, one end of which is shaped so as to be easy to hold in the hand, while the other carries the pleximeter (*plx*), which is placed firmly upon the surface of the body when in use. Fastened to the handle by a joint is the plexor, made of a hard-wood key (*k*) to which is attached a steel spring (*s*) upon the extremity of which is a piece of metal (*h*) shaped like the head of a hammer. A spiral spring (*sp*) of phos-



phor bronze is compressed when the key is depressed, and when the latter is released it throws the hammer against the pleximeter. As it is necessary that the hammer, having delivered its blow, should spring back a little, a check (*ch*) made of leather and felt is arranged so that the amount of play of the key and hammer can be accurately regulated. By means of this check the hammer may be made to strike a very light, sharp blow, or it may be allowed to strike a harder one.

The application of the instrument is very simple. An ordinary binaural stethoscope is applied closely to the surface of the body at any convenient point where the viscus whose size is to be ascertained comes into direct contact with the internal surface of the structures composing the walls of the abdomen or thorax, in the same manner that the stethoscope of Clark and Cammann was applied long ago for purposes of auscultatory percussion. The percussion is made in the following manner: Apply the pleximeter closely to the body-surface, holding the instrument firmly in the hand. Depress the key, either with the thumb or index finger, until it touches the handle, then release it by slipping the thumb or finger off on one side or the other of the key. Begin the percussion a considerable distance outside the probable limits of the viscus under investigation, and make the instrument approach nearer the probable outlines, delivering blow after blow. When the surface of the viscus is reached, a sudden change in the quality of the sound heard through the stethoscope will be observed; it takes on a wooden or a metallic type, and becomes suddenly louder. Attention must be directed rather to the *quality* of the sound than its *loudness*. The ringing of the wood or metal is the distinctive peculiarity. I think it will be easily appreciated after a little practice by any one.

It is not possible for me to state accurately at the present time the limits of the utility of this instrument. I can only say that it is useful in auscultatory percussion alone, not in ordinary percussion. I think that in the former it will prove of distinct value, and will be found to increase precision in diagnosis. I think, also, that it will make the use of any special form of stethoscope unnecessary in auscultatory percussion.

The W. F. Ford Co., of New York, will supply the instrument, and its cost is not great.

THE INTERNAL ADMINISTRATION OF OZONE IN THE TREATMENT OF PHTHISIS.

*REPORT OF CASES.**

By HENRY S. NORRIS, M.D.,

VISITING PHYSICIAN, CHARITY HOSPITAL, NEW YORK.

In a paper entitled Prevalence of Consumption in the United States, read before the Academy of Medicine in New York, by Dr. John S. Billings, of the army, on January 28, 1892, he gives some statistics of consumption taken from the eleventh census (1890). During that year there were 101,645 deaths from this cause, being a little over 1·6 in 1,000 of living population. From reports from districts where the registration of deaths is accurately kept, the death-rate is so much higher than this that allowance must be made for districts where registration is neglected or imperfect in estimating the extent of phthisis in this country. "From these data," continues Dr. Billings, "it is quite safe to assume that the number of deaths due to pulmonary phthisis in the whole country during the census year was over 125,000." "If we estimate the average duration of the disease as two years, we shall have two cases in existence for every death." At this rate of calculation, we have now in the United States alone over 250,000 cases of pulmonary phthisis. Is it any wonder that the number of remedies that have been recommended for this disease is almost infinite? It seems almost a presumption to add to the list, but after several months' trial of ozone in my wards in Charity Hospital I have become more than favorably impressed with it, and I think that the history of my cases will not prove unprofitable and may lead others to venture with more or less confidence to add their experience to mine.

In November, 1891, my attention was called to a preparation of ozone called aquozone, which is a two-and-a half-volume per cent. solution of ozone in water, the stability of which is maintained by the presence of a certain amount of hypophosphites. I was induced to take some to the hospital and try it for the night-sweats of phthisis. I had in my wards at the time some fifteen or twenty cases in all stages, and from the number selected two for the experiment.

They were both in young women of about the same age, both confined to bed, had been on creasote and cod-liver oil, and were receiving extra diet. They presented nearly the same phenomena, Case II being further advanced than Case I. I began cautiously with the first case, as I had very little confidence in the remedy, and it was not until after two weeks that I ventured to use it on the second case.

Case I. *Catarrhal Phthisis.*—Annie Q., aged twenty-one, single, United States, admitted to hospital November 6, 1891. Family history good. Has had a cough for a year, and has been a patient in Bellevue and in Charity Hospital once before, whence she was discharged October 20th. Has lost flesh, and has heavy night-sweats. Cough worse at night and in the morning. Sputum thick and abundant. Has fever in the afternoon and is confined to her bed. Physical examination showed bronchial breathing, voice and whisper over right upper lobe in front and behind, with râles after coughing.

On November 8th she was put upon aquozone, ozonized cod-liver oil, and iron. The aquozone was given in four doses of three ounces each, one before each meal and the fourth at bed-time. The oil, containing six volumes per cent. of ozone, was given half an ounce after each meal. The diet was not changed. In a month the bronchial breathing had almost disappeared, cough and night-sweats had stopped, the patient had gained in weight, and was up and about the ward. She left the hospital December 23d with only traces of the disease remaining.

Case II. *Catarrhal Phthisis.*—Lillie S., aged eighteen, single, United States. Admitted to hospital November 10th. Tubercular family history. Has been confined to her bed for a month. Has had a cough for a year, and one attack of hæmoptysis. Has had night-sweats and fever for past three months, worse during past two months. Coughs worse at night and in the morning. Sputum thick, sticky, and abundant. Has lost a "good deal" in weight. Present condition: Patient pale, thin, but not emaciated. Skin hot and dry; respirations hurried. Physical examination revealed consolidation of the left upper lobe, with a profusion of moist râles. Evening temperature runs from 101° to 103°, and is above normal in the morning. Treatment on entering hospital, creasote, cod-liver oil, and extra diet. On November 23d her condition was practically unchanged. She was then put upon aquozone, twelve ounces a day, and ozonized cod-liver oil, half an ounce three times a day. The first effect was the lessening of the frequency of the cough and the quantity of expectoration. The night-sweats ceased, her appetite increased, she began to pass comfortable nights, and in two weeks she was out of bed. At the end of three weeks there was a perceptible gain in weight, and she had almost ceased to cough and expectorate. She was discharged at her own request on December 14th. At this time there was still bronchial breathing over left upper lobe, but it was tempered with a vesicular quality, and the râles had almost disappeared.

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* Read before the Hospital Graduates' Club, April 28, 1892.

These two cases convinced me that I was dealing with a powerful and useful agent. The rapid and immediate improvement following the administration of these preparations of ozone encouraged me to continue the experiment. I began at once to apply it to various forms and stages of phthisis—from the mild cases with recent consolidation to those with cavities and tubercular diarrhœa. I did this with the object of discovering, if possible, what the limits of utility were, to find out what classes of cases responded to the treatment, and to notice its effects even upon those where any treatment must be useless. The remedy was always given in the same manner, viz.: Twelve ounces of aquzon a day in four doses, one before each meal and the fourth at bed-time. An ounce and a half of ozonized oil, being half an ounce after each regular meal. It was not used in all the cases in the wards. Others were kept upon creasote and cod-liver oil in order to compare the two plans; but those upon the ozone seemed to do so much better than the others that I was frequently besought by these to be put upon the new treatment.

The history of the remaining cases is as follows:

Case III. *Catarrhal Phthisis.*—Annie S., aged twenty-six, Ireland, widow. Admitted December 7, 1891. Family history good. Has been sick about four months. In September, 1891, had severe chills and fever which lasted three weeks. Weight before this, one hundred and eighty pounds. During this period "took cold," and in October, 1891, took to her bed on this account. Has a bad cough, worse at night and in the morning, with a thick and profuse nummulated sputum. Has drenching night-sweats, and has lost a great deal in weight. Patient too ill to be weighed. Probable weight, one hundred and twenty-five to one hundred and thirty pounds. Condition at time of admission: Thin, but not emaciated. Is very pale, except at times when she is flushed. Temperature ranges from 100° A. M. to 103° P. M. by the mouth. Physical examination shows consolidation of left upper lobe, with a profusion of large and small mucous râles, but no cavities. On December 17th she was put upon aquozone and ozonized cod-liver oil, as in the other cases, the previous treatment having been creasote and cod-liver oil. At the end of two weeks the morning temperature became normal and remained so, except on one occasion, when it reached 100°. After January 22d, or about five weeks after ozone was begun, the evening temperature came down to normal, and has rarely been above that since. Since then the cough and expectoration have almost entirely ceased, and the patient has been up assisting in the work in the ward. The weight has increased to one hundred and forty-six pounds.

March 24th.—Physical examination revealed increased voice sounds over upper half of left lung, but no bronchial breathing or voice and no râles. A few râles were heard in right supraspinous region. Patient still under treatment.

Case IV. *Catarrhal Phthisis.*—Agnes M., aged twenty-four years, Ireland, married. Family history good. Has five children, youngest four years old. Admitted to hospital December 22, 1891. In March, 1891, she had the "grippe," since which time she has had a cough. Had a hæmorrhage in June, 1891, and even now occasionally "spits a little blood." Has night-sweats, and has lost a good deal in weight. On admission patient is pale, thin, but not emaciated. Cough troublesome, and expectoration thick, lumpy, and abundant. Physical examination revealed an area of bronchial breathing in left axillary region, extending down to inframammary line. Up to February 2, 1892, the patient had been taking creasote and cod-liver oil and Blaud's pills, but her condition remained practically unchanged. On that day aquozone and ozonized oil were begun, and the iron continued. At the end of three weeks the night-sweats had ceased, the cough and expectoration had markedly diminished, and the pure bronchial breathing had assumed a distinctly vesicular quality. The râles were less numerous, and the pallor of the patient had given place to a slight tinge of color. This patient had been under treatment from December 22d to February 2d, with practically no change in her condition. On this date ozone was begun, and her improvement was at least coincident with its administration. On February 19th she asked permission to return to her family, and a few days after was discharged.

Case V. *Catarrhal Phthisis, with Cavity.*—Rose McQ., aged twenty-seven, Ireland, widow, domestic. Admitted January 4, 1892. Family history phthisical. Was never ill until three years ago, when she had the "grippe." Since then she has had a cough. Two months ago she became much worse; began to have night-sweats, pains in her chest, and at times spat up blood. She has lost much flesh, and can sit up only part of the day. On admission she is very thin, though not to emaciation. Coughs a good deal, and expectorates a quantity of characteristic sputum. Physical examination revealed a cavity with gurgles in upper part of right lung anteriorly, with a considerable area of consolidation about it; and a profusion of large and small mucous râles extending to the base of the right lung. When first admitted she was put upon the creasote treatment, as is almost every case when first entering the hospital. This was continued until January 18th, when the ozone was begun. On this day the record reads: "Slight night-sweat; expectoration profuse; temperature, 100·8° A. M.; 100·4° P. M." From this time the temperature ranged lower, never rising above 99°, except about February 4th, when, after "taking cold," she passed five or six poor days. From this time she continued to gain in every way, and on February 17th the nurse records: "Patient much better; cough and expectoration less; appetite good; rests well at night." She continued to improve up to the time when she left the hospital on March 16th. She had gained in weight, had not had a night-sweat for three weeks, slept and ate well, and cough and expectoration were both lessened. The physical signs shortly before she left showed great diminution of râles over lower part of right lung, and though the amphoric breathing at the apex persisted, the gurgles and other liquid sounds had disappeared.

Case VI. *Catarrhal Phthisis.*—Elizabeth C., aged fifty years, Ireland, married, domestic. Admitted January 8, 1892.

Family history good. Was never sick until three years ago, when she had pneumonia. Has had a cough since that time, but since four months it has become much worse, and is accompanied with fever and night-sweats. Condition on entering hospital: Patient thin almost to emaciation, but still has pretty good strength, though confined to bed. Has consolidation of whole of right upper lobe, with a few râles increased by coughing. Aquozone and ozonized oil were begun on January 18th. For a time her cough and expectoration diminished and she began to improve, to eat and sleep better. But suddenly the process became more active, tubercular pneumonia developed in both upper lobes, and it became evident that her strength could not stand the strain much longer. When I went off duty she was still living, but a fatal termination was inevitable

Case VII. *Catarrhal Phthisis.*—Mary K., aged twenty-one years, single, United States. Brought to hospital in the last stages of phthisis. Emaciation extreme, and it was only with difficulty that bed sores could be prevented. Aquozone was given with the hope of relieving the teasing cough and expectoration, which it seemed to do for a time. The lungs were so riddled with cavities that nothing could be expected from any treatment, except so far as it should relieve her distress and make her comfortable. This patient died about two weeks after admission. My object in using ozone in this case and in another equally hopeless one, which will be mentioned later on, was to see if, in such an extremity, the relief from the desire to cough, and the diminution in the quantity of expectoration that had followed immediately in all the other cases, would not occur under these circumstances. I found that it did at the beginning, but the general condition of the patient was so bad, and she suffered so much from other and even more distressing symptoms, that the benefits of the remedy were not very apparent.

Case VIII. *Catarrhal Phthisis.*—Charles McC., aged forty-eight, Ireland, widower, waiter. Admitted December 4, 1891. Family history good. Had pneumonia four years ago. Pleurisy three years ago. Otherwise has never been ill. Weight before present illness, one hundred and fifty-five pounds. Has had a cough for three or four weeks. Cough hard and dry, and is accompanied with weakness and shortness of breath. Coughs more in the morning. Condition on entering hospital: Patient pale, nutrition fair; weight, one hundred and thirty-eight pounds. Has fever every day. Physical examination revealed bronchial vesicular breathing, bronchial voice, and small mucous râles in left supraspinous region.

Treatment.—Cod-liver oil and creasote until January 5th, when, there being no improvement, aquozone and ozonized oil were begun in the usual way. For the first two weeks his temperature ranged from 99° in the morning to 100° to 101·4° in the evening, on only one occasion being normal. The next two weeks it became normal at times, but was usually one or two degrees above. After that time his temperature became normal, and remained so except at rare intervals.

March 24th.—His cough is entirely gone, and the lung is free from adventitious sounds. His weight has increased to one hundred and fifty pounds. He was discharged at his own request, as he felt well enough to return to work.

Case IX. *Catarrhal Phthisis.*—Martin K., aged twenty-five years, single, Russian; laborer. Admitted November 30, 1891. Was taken ill with a "cold" in March, 1891. Has had a cough and almost nightly sweats since then. Six months ago had spitting of blood for two months. This was of a dark color. Present condition: Has a severe cough with abundant expectoration, pain in the chest, and has had diarrhœa for three months. Has been confined to his bed for two months. Is very pale, but fairly well nourished. Physical examination reveals spots of consolidation in both upper lobes posteriorly, characterized by broncho-vesicular breathing and bronchophony, and pleuritic friction over same area.

January 7th.—Patient has been upon creasote and cod-liver oil, with remedies for diarrhœa. He is still in bed, and seems in a bad way. To-day aquozone and ozonized oil were begun, with salol for diarrhœa. His temperature was usually about 100° in the afternoon, but was normal in the morning.

He was out of bed for the first time on January 27th, and diarrhœa had stopped by February 5th. When he was first admitted he was too ill to be weighed, but he has evidently put on a good deal of flesh, and weighed, March 17th, one hundred and forty-five pounds. His temperature has become normal and has remained so, although he still has night-sweats about twice a week. On March 24th, physical examination: Absence of broncho-vesicular breathing and bronchophony, but voice sounds were still intensified over upper part of *left* lung behind. Friction sounds still persistent. He coughs only a fraction of what he did, and the expectoration is very limited. Since writing the above he has asked for his discharge, so that he can go back to work.

Case X. *Catarrhal Phthisis with Cavity.*—Charles W., aged forty-two years, married, England; laborer. Admitted February 9, 1892. Father died of phthisis; otherwise family history negative. Has had a cough for about a year, and has twice before been an inmate of this hospital. He returns in very poor condition. Has dyspnœa on exertion and is rapidly losing flesh. Has night-sweats. Had two hæmorrhages in April, 1891. Condition on admission: Pale, thin, though not emaciated. Physical examination revealed consolidation of right upper lobe, which also contained a cavity. Previous treatment: creasote, under which he improved, and left the hospital in December, 1891. Aquozone and ozonized oil begun February 25th. Weight, one hundred and thirty-five pounds, but, diarrhœa supervening, it ran down to one hundred and twenty-eight pounds on March 17th. He regained this afterward.

Present Condition, March 24th.—Weight, one hundred and thirty-one pounds. Has shortness of breath, and less cough and expectoration. Physical signs practically unchanged. At the beginning he seemed to be improving, but at the last examination it was evident he was losing ground. He is still under treatment.

Case XI. *Catarrhal Phthisis.*—Carlos Fidi, aged thirty-two years, Italian; laborer. Admitted December 23, 1892. The patient was in the last stages of the disease. Emaciated, lungs riddled with cavities, and with tubercular laryngitis. Ozone was given him, for the cough and expectoration, which it relieved and diminished, much more markedly than in the case of the woman (Case VII) in about the same condition. His case, however, was a hopeless one, and he died one month after admission.

Case XII. *Catarrhal Phthisis, with Pleurisy and Bronchitis.*—William C., aged twenty-two years, single, Ireland; laborer, Admitted December 29, 1891. Family history good. Present trouble began six months ago; has been worse for past few weeks. Has severe cough, dyspnœa, and pain in the chest. Cough worse nights and mornings. Physical examination revealed consolidation of upper part of both lungs, with pleurisy and extensive bronchitis below. He was first put upon creasote and cod-liver oil, and then upon aquozone and ozonized oil, but no change took place for the better. The disease progressed until he was obliged to take to his bed, and finally asked to be allowed to return home. He left the hospital in worse condition than when he came in.

Case XIII. *Catarrhal Phthisis.*—Charles B., aged twenty-four years, Ireland, married; driver. Admitted November 27.

1892. Family history good. Has been ill for three years. Two years ago was a patient in this hospital with phthisis. Lately his cough has increased, and he has dyspnœa, night-sweats, and fever. Physical signs show both upper lobes are consolidated, and are beginning to break down. Cod-liver oil, creasote, and remedies for night-sweats were given until January 4, 1892. His condition steadily grew worse, and he was on that day put on the ozone treatment. At the end of four weeks his cough and expectoration had been favorably influenced, but, in the main, his condition had steadily become worse, and he asked leave to go home. He was discharged February 2d. In this case, as in Case XII, the disease was too extensive and too far advanced to admit of any improvement under the circumstances.

Case XIV. *Fibroid Phthisis.*—James McT., aged fifty-three years, Ireland, widower; laborer. Admitted February 8, 1892. Family history unimportant. Has had a cough for three years, worse for last six months, during which time has lost about thirty pounds. Has never had fever or night-sweats. On admission, patient is pale and complains of dyspnœa on exertion. Physical examination revealed bronchial breathing, and voice extending from apex to base of left lung behind, with fine râles throughout. Ozone was begun on February 12th, four days after admission. The cough and dyspnœa subsided rapidly, and he was able to sleep the entire night. On March 24th the examination revealed the fact that the pure bronchial breathing extended only to angles of the scapulæ, below which point it had a distinctly vesicular quality, with abundance of small râles. This patient improved markedly and gained thirteen pounds in weight, but his age and the character and extent of his disease preclude the possibility of his recovery.

Case XV. *Catarrhal Phthisis.*—Emily L., aged twenty-six years, single, United States; dressmaker. Admitted February 14, 1892. Part of family died of phthisis. Part now living and healthy. Has always been subject to coughs. Present trouble began three months before admission. Cough severe, sputum thick and nummulated. Has night-sweats and has lost fifteen to twenty pounds in three months. Two months ago had hæmatemesis, and was under treatment for gastric ulcer. Present condition: Very anæmic, but fairly well nourished. Physical examination revealed slight consolidation at right apex, characterized by bronchial breathing and bronchophony.

Treatment.—Cod-liver oil, compound syrup of hypophosphites, iron, and for the sleeplessness present, sulphonal. This treatment was carried out until March 19th without much change in her condition. On March 17th her weight was one hundred and thirty-three pounds and a half. On the 19th ozone was begun in the usual manner. On March 30th the record says: "Cough and expectoration less, and patient eats and sleeps well; weight, one hundred and forty-three pounds and a half." Physical signs were somewhat modified, but the bronchial breathing remains. Patient still under treatment.

In reporting these cases I have given both my failures and successes, and I have endeavored to be accurate without going too much into detail. It is no part of my desire to bring forward a specific for pulmonary tuberculosis. There is, in all probability, no such thing in existence. I simply wish to add to the therapeutic measures at our command another, that has seemed to me to be worthy of further investigation. That it has not always succeeded is not to its discredit. Its use has, in some of the cases above cited, at least been coincident with an improvement where none occurred before, and wherein all the incidents and circumstances had been the same, with the single addition of ozone. The repetition of these coincidences offers good reason for giving to this agent at least a fair amount of credit.

If the plan outlined in this series of experiments could be carried still further; if, in addition to less crowding and better food for our patients, we could keep them in an atmosphere containing a certain and constant amount of ozone—the quantity to be determined by experiment—might we not hope for better results than are now attained in ordinary hospital practice? The poor can not be sent to congenial climates and pure atmospheres, but, by force of necessity, are crowded into hospitals whose walls and floors are too often saturated with emanations from previous generations of unfortunates.

In what way ozone acts when administered by the stomach I do not know. Whether its effects are expended upon the forces of digestion, and in that way influence nutrition, or whether it is absorbed as ozone, I am not prepared to say. But, from its rapid effects upon the secretions in the bronchial tubes, it seems as if it may find its way into the circulation. It is for this reason that I give the ozone water as nearly as possible on an empty stomach.

The cases in which it has proved most successful in my hands have been in persons under thirty-five years of age with catarrhal phthisis, where the disease has not passed far into the second stage, has not been too active, and has been limited to a single lobe, or, if in both lungs, has been confined to comparatively small areas. In every case where these conditions existed the patient's improvement was immediate and progressive.

Of the fifteen cases reported I can not say that a single one was cured, but such favorable changes took place that such a result might be expected if the use of ozone could be carried far enough. Of the number reported, two patients, who were in the last stages of the disease at the time of admission, died. This leaves thirteen in whom benefit was possible. Of this number, five gradually grew worse and were not favorably influenced by the treatment. All these patients had extensive disease of both lungs. One patient improved while under treatment, but the nature of his disease (extensive fibroid phthisis) and his age (fifty-three) precluded the possibility of complete recovery. In seven cases marked improvement took place; increase in weight, extending to over fifteen pounds in one case; diminution and even cessation of cough and expectoration; termination of night-sweats; and, finally, notable and favorable modifications of the physical signs, amounting in two cases to their entire disappearance.

Of this last group all had catarrhal phthisis. In one instance there was consolidation of a part of the upper lobe of each lung, in one case there was a cavity, and in the rest the disease was limited to one lobe.

The benefits of an atmosphere highly charged with ozone in the *early* stages of phthisis has been noticed by observers for the past thirty years. Can the same benefits be secured by its internal administration, or by inhalation of the artificial product properly diluted, or by both together? The subject is one that is worthy of consideration, and seems to offer great possibilities.

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COCAINE IN THE TREATMENT OF ACUTE INFLAMMATIONS OF THE EAR.

By JULIUS WOLFENSTEIN, M. D.,
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The well-known local anæsthetic properties of cocaine have also occasionally caused its use in acute inflammatory conditions of the ear to ameliorate the pain which is an almost constant accompaniment of these affections.

In the beginning of my experience with this class of cases I used cocaine to combat the pain which an attack of acute inflammation of the membrana tympani or of the middle ear occasions. In order to allay the pain I found it necessary to use the cocaine solution more frequently than is generally recommended by the few authors who have used it in these affections; and in this way I further observed that almost all of my patients with acute otitis media recovered without suppuration having occurred, while formerly suppuration supervened in quite a number of my cases.

I have not kept an exact statistical report, but I judge that I have treated about one hundred cases of acute otitis media, also a few cases of acute inflammation of the membrana tympani, the so-called myringitis acuta, with the cocaine solution during the past four years, and in only four or five per cent. suppuration occurred. And, further, in two or three of these cases the suppuration was directly attributable to neglect on the part of the patient.

It is true that many cases of acute otitis media terminate without suppuration, but I hardly believe this to be the result in ninety-five per cent. of all cases as it happened in my experience.

Of the one hundred cases, about eighty-five occurred in children from five to about fifteen years of age, and I had the opportunity of observing these cases from their earliest incipiency to their termination. I reside in an orphan asylum with an average inhabitancy of over four hundred children, and I have thus had the rather rare opportunity of seeing almost all these cases in their very beginning. The first thing a child with a beginning otitis media acuta will complain of is pain, or "earache," as it is commonly termed. An examination will reveal the blood-vessels of the membrana tympani—which, as a rule, are invisible under normal conditions to the naked eye—enlarged and plainly visible as delicate red streaks, radiating from the center of the drum membrane to its circumference, and the whole membrana tympani of a dull reflex.

Immediately about five or six drops of a five-per-cent. hydrochloride-of-cocaine solution are instilled into the external canal, the head of the patient being bent to insure contact of the cocaine solution with the inflamed drum membrane. The external canal is then closed with a piece of absorbent cotton. After ten or fifteen minutes the pain disappears and the little patient is ordered to come again when he has pain. If the inflammation is rather severe this will occur in a few hours, when the solution of cocaine is again instilled, and so on until all pain has ceased. With the diminution of the pain the inflammation apparently disappears, at least an examination reveals the drum membrane much paler and the blood-vessels much less distinct.

Sometimes a single instillation is sufficient to abort an attack of acute inflammation of the ear; this I have especially noticed in the cases of acute inflammation of the drum membrane which occur so frequently during the bathing season, where cold water is forcibly driven into the external ear against the drum membrane. In this connection I remember the case of my brother, who some time ago went bathing in the lake and who had some water forced into his ear. An hour afterward he complained of severe pain, and, on examination, I found the membrana tympani very much reddened and already apparently inflamed. Two instillations of a five-per-cent cocaine solution were made at an interval of two hours, and next morning the drum membrane had an almost normal aspect again. The pain subsided in fifteen minutes. This is a typical case, especially when seen in the beginning.

The cases of acute otitis media generally require only two or three days' treatment with the cocaine solution. After two or three instillations the drum membrane begins to fade, the redness begins to disappear, and the pain is generally gone. I generally order the instillations to be continued for a day or two about three times daily after the pain has disappeared—in fact, as long as there is any considerable redness of the drum membrane.

All ordinary cases of acute middle-ear inflammation will generally subside under four or five instillations daily. It is hardly necessary to add that during unfavorable weather or in severe attacks of the inflammation the patient is ordered to stay indoors, or that any complications, like fever, acute rhinitis, pharyngitis, etc., are to be treated in the ordinary manner.

Besides the rapid disappearance of the pain and inflammation with the cocaine treatment of acute otitis media there are two other points I would like to mention. Firstly, the hearing picks up very rapidly, which is quite a favorable point, since if left to itself, or even with regular inflation of the middle ear, it generally requires fully two weeks for the hearing to again become normal. Then, secondly, the tinnitus, which is often quite aggravated in acute otitis media, seems also to be favorably affected, together with the inflammation, and generally after several instillations no great amount of tinnitus is complained of, although this is not as universally the case as the subsidence of the pain and inflammation with the cocaine treatment.

In acute inflammations of the drum membrane proper there is hardly ever any tinnitus and very seldom any diminution of hearing, so that for these cases the cocaine treatment can almost be called ideal.

In severe cases where suppuration impends and where pus is already formed (I remember of one such case in my practice) the cocaine solution must be used more frequently—every hour or two—until the pain ceases. In some very severe cases, where the drum membrane was so inflamed and swollen that its normal configuration was entirely destroyed, and even in the one case where pus had already formed and could be seen shining through at one point of the thinned membrane, the persistent and persevering use of instillations of the five-per-cent. cocaine solution, and in the last-mentioned case of an eight-per-cent. solution, prevented suppuration. In order to establish more fully the correctness of this manner of treating acute inflammations of the ear, I will mention my experience with six cases of aural complications of scarlatina, surely, together with diphtheria, the most malignant and severe types of acute middle-ear inflammations. In the six cases the cocaine solution was applied hourly until pain ceased, and I was fortunate enough to avoid suppuration in all of them. Of course I saw the cases very shortly after the patients complained of pain, since they all occurred during two epidemics of scarlet fever in the asylum.

In the cases of acute otitis media in which suppuration occurred in spite of the cocaine instillations, it was due, firstly, in two or three cases directly to negligence in not following the directions given the patients, and, secondly, in the remaining few cases the disease had already passed the stage where suppuration could be avoided.

In adults the same favorable results were obtained as in the children mentioned above.

This experience is given after a fair trial, and I think I can say, without adding any hypothetical reasons as to the cause of the results obtained, that cocaine not only acts as an analgesic in acute inflammatory conditions of the ear, it is also an antiphlogistic in these cases, and, further, that suppuration can almost always be avoided, especially when the cases are seen early enough.

A few words more as to the cocaine solution and its application. In the beginning I did not always obtain as good and as rapid results as I now do. But since I have used Merck's crystallized hydrochloride of cocaine I am perfectly satisfied. Then I generally use a five-per-cent. solution in distilled water, with a few grains to the ounce of boric acid to insure the stability of the solution. The solution is warmed to the temperature of the body before instilling into the ear. In very severe inflammations an eight- to ten-per-cent. solution is used.

In conclusion, I should like to add that I have never seen the slightest toxic effects from the cocaine in these cases.

The Microbe and Early Medical Lore.—"It is curious to observe," says the *Lancet*, "how from time to time different people lay claim for their own special school or their own country to the discovery of a bacteriological ætiology of disease. The recent Oriental Congress calls to mind Pandit Janardhan's article on 'Disease Microbes anticipated in Sanskrit Medical Works,' which appeared in the April number of the *Imperial and Asiatic Quarterly Review*. It must be confessed that he does not bring forward anything to prove that naked-eye parasites were the cause of disease, and his illustrations in support of his theory that Indian sages looked upon organic germs as the cause of disease scarcely warrant the interpretations he puts upon them. He depicts the ordinary forms found on many of the older manuscripts and tablets: snakes, scorpions (or something like them), pediculi, star-fish, tadpoles, and curiously enough—as if the draughtsman had had some quaint conceit in his mind—outlines of manikins such as most of us have drawn on our slates during the earlier period of our lives. The article is exceedingly interesting, but we must, throughout, read 'worms' or 'animal parasites' for microbes, for of the presence of the microbe in the mind's eye of the earlier medical sage there is little or no evidence."

MULTIPLE TENDON AND NERVE SUTURE,

WITH PERFECT RECOVERY IN SPITE OF SUPPURATION.*

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On May 27, 1890, a four-year-old boy, Willie D., was brought to my department in the dispensary of Mount Sinai Hospital. He showed a ragged, deep, transverse, anterior wound of the right wrist. About two hours before, he had fallen through a skylight. The injury was a cut with glass. Hæmorrhage had been severe, so the child's mother put the dish-rag into the wound and went with him to a neighboring physician, who recognized the case as one requiring operation and sent the patient to the dispensary. Bleeding had by this time ceased.

Examination showed the ends of divided tendons lying in the wound. There was slight voluntary motion of all the fingers and of the thumb, but no control of the individual members. The fingers were semiflexed.

No examination as to sensation was made. Immediate operation being inexpedient, the wound was covered with a wet antiseptic dressing and patient ordered to report the next day prepared for anæsthesia.

On May 28th, twenty-four hours after injury, the child was chloroformed. A Martin's elastic bandage was adjusted above the elbow and the wound thoroughly exposed. A longitudinal incision through the skin and fascia was extended about two inches above the cut and about three quarters of an inch below it into the palm. The flaps being dissected off and retracted, showed that the glass had cut to the bone, dividing all the anterior structures of the wrist from the flexor carpi ulnaris to the flexor longus pollicis inclusive.

An enumeration follows: Tendons of flexor carpi ulnaris, four superficial flexors of fingers, four deep flexors of fingers, palmaris longus, flexor longus pollicis, flexor carpi radialis; ulnar artery, ulnar nerve, median nerve.

Bleeding from the severed artery had ceased, but its ends were tied. The distal tendon ends were easily brought to view by flexing the wrist. The proximal had retracted far up the arm and were with considerable difficulty found and brought down. The structures had to be rather roughly handled and the arm was strongly "*milked*" toward the wound.

The tendons and nerves were very small and were therefore exceedingly difficult to manage. In order to identify the tendons, each one had to be dissected out to or nearly to its muscle. Approximation was made according to apparent anatomical relations, and the ends, after being "freshened" with scissors, were joined with fine iron-dyed silk. The larger tendons were united with two sutures, the smaller ones with only one. The central end of the median nerve was freshened, but the peripheral end was so near its bifurcation at the palm that this could not be done.

The nerve was sutured with two lateral silk stitches. An attempt was made to include only the sheath, but this was not feasible. Both ends of the ulnar nerve were freshened, but it was only as large as a small knitting needle, so that but one suture could be passed, and that directly through the nerve trunk. The wound was now again cleansed as thoroughly as possible and was closed with catgut stitches placed far apart. No drainage-tube was used. The usual antiseptic dressing was applied with a piece of sterilized rubber tissue next the wound.

A flexed position of the wrist was maintained with stiff dextrin bandages. The operation was finished in two hours and a half.

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* Read before the Section in General Surgery of the New York Academy of Medicine, March 14, 1892.

I here gratefully acknowledge the valuable assistance and counsel of Dr. J. M. Ferrer and Dr. F. C. Husson in carrying out the troublesome steps of this operation.

On the following day there was some fever, with pain and swelling of the arm, and on the 30th, forty-eight hours after the operation, it became necessary to dress. Profuse suppuration was evident, due, possibly, to some error of antiseptic detail, or perhaps, more probably, to an infection from the above-mentioned dish-rag, carried up the limb by the retracting tendons. All the skin sutures were at once removed, the wound was dressed wet and allowed to granulate. A bad prognosis was given.

Three silk tendon sutures subsequently came away. The nerve sutures all held. The wound was slow to heal, and there was finally a large cicatrix binding everything together in one mass.

Early in August consent was obtained to a second operation. The condition of things was then as follows: No sensation over median and ulnar distributions. Wasting of the tissues of the hand had gone on rapidly, and now there were thenar and hypothenar depressions instead of eminences. The hand was cold, bluish, and clammy. The position was claw-like. The skin was soft and infantile from disuse. The arm was much wasted. The entire member was useless.

With the assistance of Dr. Husson, medical student Samuel Goldstein chloroforming, the cutaneous portion of the scar was excised, and an attempt made to free the matted tendons. With the superficial ones this was successful. Two of the tendons, probably those where the sutures had come out, had considerably retracted and the proximal and distal ends were left connected by scar tissue, which was dissected out into cords continuous with the tendons.

The patient bore the anæsthetic badly, so most of the deeper tendons were left to themselves.

The median nerve was exposed, the ulnar not. The skin suture and the dressing were the same as at the first operation. Rapid primary union followed.

The case was now put into the hands of Dr. Montrose R. Richard at the dispensary for faradization. This was faithfully carried out every two days, and the patient's mother was instructed to employ frequent massage to hand and arm. Progress was now very slow but constant.

From Dr. Richard I learn that on September 2d the hand was atrophic, the scar very sensitive, and the palm to a marked degree hyperæsthetic. Faradization painful. There was slight voluntary motion of all the fingers, but the dynamometer remained at zero.

The galvanic current caused slight contraction of the thenar group; faradaic, good contraction.

September 28th.—Improvement in voluntary motion. Dynamometer 10+. Sensation and power of location in individual fingers very slow to return. Appeared last in the ring finger.

By February, 1891, there were pretty free motion and a complete return of sensation. The hand was still much smaller than its fellow, however, not having kept pace with it in growth; and it was correspondingly weak.

By June function was nearly perfect, but the part was still defective as to development.

The boy is at present right-handed, and there is little if any difference as to the usefulness of his hands.

The ungual phalanx of the middle finger moves little, if at all. Its tendon is one of those not freed at the second operation.

An almost exactly similar case to the one just described was reported by Reboul in *La France médicale* for December 14, 1889. The severed structures of the right wrist were, curiously enough, precisely the same as those in my case.

The wound was clean, and the patient was well in six months, but she was a girl eleven years of age, seven years older than my patient. The technique must have been decidedly simpler.

Two more cases of tendon suture will be of interest in comparison with the one just reported. Both occurred in the practice of Dr. A. G. Gerster.

Case I.—J. G., aged seventeen, a healthy youth, on July 12, 1889, fell upon a piece of glass and received a palmar wound over the right index metacarpal, severing both index flexors.

The patient was at once seen by a careful physician, who cleansed the wound, and, suturing the skin, dressed the hand antiseptically and referred the case to the surgeon. Forty-eight hours later, in ether anæsthesia, the wound was reopened, and Dr. Gerster performed tenorrhaphy. Two silk sutures were inserted in each tendon. A drainage-tube was used. The usual dressing was applied, with the hand and finger flexed. Recovery was uninterrupted and perfect.

Case II.—A. M., aged forty-three, a strong, healthy man, received on December 12, 1891, a deep laceration of the right wrist by a bottle neck. The tendon of the flexor longus pollicis was divided, the tendons of the index were partly cut through, and one artery, probably the radial, was wounded.

The man was at once seen by a surgeon, who ligated the artery and dressed the wound antiseptically, but *dry*, with a view to a subsequent operation. Twenty-four hours afterward I changed the dressing. The wound looked well, but there was pain up the arm, with slight swelling, and the patient's temperature was 100° F. A wet dressing was applied.

On the following day, forty-eight hours after the injury, Dr. Gerster operated.

Ether was given. An elastic constrictor was applied to the upper arm. The thenar muscles were deeply incised in search for the distal tendon end. A double silk suture was passed. The lacerated index tendons were let alone. A catgut skin suture was employed. A drainage-tube was inserted. The usual flexed position was used to relax the tendons. The drainage-tube was removed in two days. Uninterrupted recovery followed.

Reviewing these three cases, the most important observation to be made is that in the one case there was suppuration, in the others asepsis.

The wound which suppurated was first contaminated by a filthy object, and was later seen by a physician who did not dress it. Not until about two hours had elapsed was the patient properly cared for. The others were seen immediately by careful men and received intelligent attention.

Of course, the dissection and mechanical disturbance of the tissues were very much greater in Willie D's case than in either of the others. Whether it might be possible that the division of the nerves rendered the tissues less able to resist sepsis I should be interested to know.

In the case with suppuration no drainage-tube was used. The sutures were placed very far apart, and sterilized rubber tissue was put next the wound to keep it moist.

In both of Dr. Gerster's cases drainage-tubes were used, and were removed in forty-eight hours. Perhaps profuse suppuration might have been avoided had I left the wound open and performed secondary suture two or three days after the operation.

Drains were out of the question because of the extensive and complicated dissection and consequent opportunities for pocketing.

I believe secondary suture would be well worth trying in cases of multiple tenorrhaphy where there might be infection.

In the after-treatment of cases where adhesions remain after tendon suture, I believe the faradaic current to be of much value. By its means we can cause good strong contractions, and in children—who may be refractory patients—it enables us to note progress in the action of each *separate* muscle.

Our main dependence, however, must always be upon voluntary effort.

The comparison of these three cases seems to me to emphasize the importance of the duty of the one first called to treat an open wound.

If he happens to be a man who does not care to practice surgery he still has a duty to perform. The patient must be protected from certain dangers, such as hæmorrhage, sepsis, and shock.

Any man who practices medicine and allows a patient with an open wound to leave his hands without having checked hæmorrhage, cleansed the wound, and antiseptically dressed it, commits at least a professional sin.

The following personal observations will close this paper:

I. There may be some voluntary motion of a part whose tendons are divided.

This happens—

1. By muscular action, where the entire sheath has not been severed.

2. There may be *pseudo-voluntary* motion on cessation of contraction of opposing muscles when the part by the elasticity of its own tissues returns to its normal position of rest.

3. In wounds not too recent, motion may be communicated through adhesion with neighboring parts of like function.

II. Retraction of divided tendon-ends may be both physiological and mechanical.

The central portion retracts by the shortening of its muscular belly. The peripheral may retract or, more accurately, may *be retracted*, by the motion of the part bearing its insertion.

Keeping this in mind, then, we should nearly always be able to bring the distal end into the wound by passive motion and should defer dissection or incision until this has failed.

III. The suggestion is offered that in cases of transverse accidental wounds of tendons where an operation must be delayed, immediate longitudinal incision through skin and fascia may increase the efficiency of antiseptic measures.

13 East Twenty ninth Street.

A CASE OF SUPPOSED POISONING FROM EITHER ARSENIC OR MERCURY.

By H. G. JENNER, M. D., Ph. B.,
DAYTON, OHIO.

This case excited a great deal of interest, as it put to the test medical and chemical ability in the diagnosis of the cause of death of the wife of the man who was accused of poisoning her:

Henry G., a farmer and a man of unsavory reputation, having been previously married twice, his second wife dying under suspicious circumstances, had employed a young girl to work for him, whom he seduced, and a child was born, but it did not live long.

The girl left him and came to the city, but, owing to his persuasions, was induced to return and live with him again.

A young lawyer, learning of the way in which she was maltreated, championed her cause and induced her to bring suit against her employer, who afterward compromised the matter and persuaded her to consent to a marriage with him, in order to save him the large sum of money which had been granted as damages by the court. She foolishly consented, after cajolery and persuasion, and they were secretly married late at night by a clergyman.

G. was well to do, and had a family of grown boys and girls, who objected, as did his mother also, to the marriage, and were, of course, much annoyed at the unpleasantness and expense of the unfortunate affair. The girl had not lived with her husband long, however, when she was taken sick after a large Sunday dinner of which a number of people partook.

After dinner they went out into the yard and began to pick cherries and eat them, she eating heartily of them.

A physician, Dr. P., was called, and, finding that she had been vomiting and purging, concluded that it was an ordinary case of cholera morbus, and left powders of subnitrate of bismuth and calcined magnesia to be given.

Afterward G. called a number of times at Dr. P.'s office to get powders for her "stomach trouble," because it still kept up, and then the doctor came out to see her several times. One day, Dr. P. not being at home, G. called another physician, Dr. F., and afterward requested that Dr. P. should bring another doctor along with him, because if his wife should die, he said, people might talk. He also told several persons that he thought his wife would not live long, and even named a time beyond which he did not expect she would survive.

Dr. J. was now brought along, and, as the patient complained of sore mouth and had some fœtor of breath, the mouth and throat were examined, and the case was pronounced mild diphtheria by the doctors, as there were white spots of membrane on the throat and mouth.

For this, tincture of chloride of iron was prescribed, with chlorate of potassium as a gargle.

G. stated to the doctor that his wife persisted in eating and drinking anything she wanted, such as beer, ice-cream, etc. This the doctor said was not good for her and ought to be stopped, as it tended to keep up the stomach trouble.

Dr. P. did not see her again, and several days later she died.

The patient was noticed to have become very much emaciated and showed great debility, but this was attributed to the effect of the disease.

The deceased was embalmed, it is said, at the suggestion of the undertaker, three quarts of embalming fluid being injected into the brachial artery and one quart into the abdominal cavity, the needle used in puncturing it being long and pushed about in the cavity as far as it would reach, in order to get the fluid thoroughly disseminated.

The embalming fluid contained one part of mercury (bichloride) to two hundred parts of arsenic (soluble arsenites). The analysis of the fluid taken from the original barrel and the same that was used was made by Mr. B., a druggist and chemist, and showed five grains of mercury to the gallon, but a subsequent test made by Dr. J., a chemist, showed 27·2 grains of mercury to the gallon.

Why this difference should exist seems to be explainable only on the ground that the fluid used in the second test was taken from the residue after most of it had been drawn off, and that the mercury was partially precipitated by the presence of arsenic.

Owing to suspicions being aroused, the young lawyer who was first interested in this matter again took it up, and it was decided to exhume the body and make an autopsy, which was done a few days after the burial.

The autopsy was made in a perfunctory manner by two doctors and two medical students, mainly by the latter, for it was supposed that nothing was wrong, but that the examination was made simply to satisfy all concerned. It was made in the usual way, and about three quarts of fluid were mopped out of the abdominal cavity. Then sections were taken from the various organs to be examined by Mr. B., the druggist and chemist, who, after ordinary tests, stated that he found arsenic present in large quantity, but no other metals after testing for them.

The body was then reinterred after the mouth and larynx were examined, and the larynx with part of the fauces removed, to be placed in alcohol to be examined if it was wished for evidences of diphtheria, as that was the disease she was supposed to have died from.

The first trial came off in October, and, owing to the doubts connected with the case, the defendant was acquitted. The chemical evidence went to show that the deceased had died from arsenic poisoning; but the strange part of it was that the chemist, Mr. B., entirely overlooked the fact of embalming having been done, and drew his conclusions from the large amount of arsenic present. The court, however, overruled the acquittal, and the case was taken into the Court of Common Pleas to be resumed at the March term, when more thorough evidence could be brought *pro* and *con*.

During the second trial, in which the case was fought very hard on both sides, many experts were brought by each side and examined. The defendant, having plenty of means, did not spare them, but secured the best legal as well as medical and chemical talent from this and other cities. His previous bad reputation influenced public opinion against him, and the public press had likewise taken sides against him, thus prejudicing the case to a certain extent.

In the trial it was brought out that the defendant had purchased white precipitate (ammonio-chloride of mercury), having applied at a second drug-store because the first one he tried required him to register his name, etc., according to the laws for the sale of poisons. The white precipitate, he said, was to be put into lard and used as an ointment for the scratches on horses. He had previously purchased red oxide of mercury for the same, being a sort of horse-doctor, but said he did not wish to stain a valuable white horse, on which he intended to use it.

During the sickness of the deceased her mother, a German woman who did not speak English, watched and nursed her most of the time. But it was noticed that whenever the doctor came G. was always present as soon as possible and answered all questions himself, never allowing any one else to do so.

Mrs. W., the mother of Mrs. G., testified that she saw G. put some white powder into the powders ordered by the doctor whenever he gave them, that he took this white powder from a paper which he carried in his vest pocket, and that on one occasion, having spilt some powder on the bureau, he carefully scraped it back into the paper, and she saw him place the paper behind the bureau. The powders could not be found after his wife's death.

Mrs. W. always noticed that her daughter vomited after taking medicine from her husband, and the vomited matter was sometimes grayish and sometimes blackish in color, but G. always attended to emptying the vessel himself, which he did immediately.

Mrs. G. complained to her mother of pains in the limbs, but G. said that was the disease working on her.

The body was again disinterred, and the rectum, vagina, uterus, and one ovary were removed to be examined. In the folds of the rectum were found specks of whitish, friable substance, which was found to be a compound of mercury. The mucous membrane was partly eroded, and there were brownish patches on it; some bloody mucus was also found.

The stomach, rectum, and bladder were found to have been empty at the first examination, and the liver and kidney somewhat enlarged, with the kidney capsule partly adherent. Mucus was scraped from the mucous membrane of the pharynx and larynx, and on it were found specks of the same material found in the rectum. There was found to be about ten grains of mercury compound deposited on the throat and about half that amount in the rectum, but none from the stomach. The larynx and fauces, on microscopical examination, were found to show evidences of an inflammation said to result from stomatitis.

Why mercury was not found at the original chemical examination was explained by the fact that the throat and rectum had not been examined, and the organs that were examined had not been exposed to sufficiently strong reagents or heat to break up the combination of mercury with the albuminates of the body.

The tests for mercury were with strips of bright copper, which were placed in the solution to be tested, and the mercury was deposited on the copper as a film, which was evanescent on heating, thus indicating that it was not tin; gold was likewise tarnished. When a strip of this copper was placed in a tube closed at one end and the tube heated, the mercury volatilized and deposited in globules at the cool end; the arsenic would deposit as crystals.

The defense endeavored to show that the mercury present in so large a quantity in the throat and rectum came from the embalming fluid which had permeated all the structures of the body by osmosis and been deposited there—as ammoniated mercury, on account of reaction between the bichloride and the ammonia generated from the decomposing body.

The prosecution held that these theories were absurdities, and that the mercury would not have localized itself in such a manner and in such preponderance over the arsenic, but that if osmosis did take place enough to have mercury present in the throat, the arsenic ought to be present also in about the same proportion as it existed in the embalming fluid.

An interesting fact was brought out: why the ammoniated mercury, which is a difficultly soluble salt, should have proved to be such a corrosive poison. The patient, I have previously stated, was given tincture of chlorated iron, which is acid, and this, coming in contact with the white precipitate, aided in dissolving it and producing bichloride, as also the gastric juice would.

In endeavoring to show that the retching and vomiting and purging were the result of indiscretions in diet producing enteritis, the testimony for the defense was given, and it was apparent to medical minds that the symptoms were far severer than was to be accounted for on this hypothesis. But it was a difficult matter for the jury to understand or appreciate the technical points, and here rested the hopes of the defense, that the medical testimony would seem conflicting to them, and it certainly did seem so, considering the talent which the defense had secured to testify in their behalf.

After very strong pleas by both sides the case was given to the jury, and the judge made his charge, advising that inasmuch as some doubts did exist, and as the result was not an immediate effect of the cause, if the cause of death was poison, the prisoner should be convicted of manslaughter.

With this charge the jury agreed, and rendered a verdict accordingly on March 21, 1892. The judge sentenced G. to fifteen years in the penitentiary—practically a life sentence.

A CASE OF

UNUNITED FRACTURE OF THE FEMUR.

By WILLIAM TREACY, M. D.,
HELENA, MONTANA.

On the 30th of October, 1891, S. Swanson, a Swede, twenty-six years of age, sustained a fracture of the right femur in the lower third. Swanson is a man of more than average intelligence, and was a contractor on the Great Northern extension, twenty-five miles from Kalispell. From him I obtained the following history:

Soon after the accident occurred a proper dressing was applied, consisting of a long side splint with coaptation splints and extension. This dressing remained on for five weeks, and when it was removed by the physician in attendance no union had taken place. A plaster dressing was at once applied and allowed to remain for ten weeks. When this was removed there was free motion at the seat of fracture, and there was no evidence of callus or any attempt at union. Swanson says that the right leg was about four inches shorter than the left at this time, and that he had constant pain above the knee. He concluded to go to Kalispell, and his leg was bandaged firmly to a long side splint, enabling him to make the journey in a wagon without any great suffering. At Kalispell he was given chloroform, and an effort made to rub the ends of the bone together, after which a plaster cast was applied. This was removed after remaining on six weeks. When he was examined there was the same degree of motion, with no evidence of union.

He then decided to come to Helena, and arrived at St. John's Hospital on March 12, 1892. On the next afternoon, with the assistance of Dr. Steele and Dr. Barbour, he was given an anæsthetic and examined. The right leg was five inches and a half shorter than the left. The end of the upper fragment was sharp and directly under the integument; we could not find the lower fragment, and it could not be got into position by extreme extension. We then decided to cut down and ascertain the exact condition. After preparing our patient for an antiseptic operation, an Esmarch bandage was applied in order to render the limb bloodless, and an incision made on the anterior surface of the thigh over the seat of fracture. The upper fragment was easily reached, as it had been forced through the rectus muscle and was only covered by skin and fascia. The lower fragment was not in sight. There was no callus deposited about the upper fragment. The periosteum was dissected back and an inch of bone removed with a narrow-bladed saw. An incision was then made through the rectus muscle, and by extension and flexion we were enabled to bring the end of the lower fragment out through the incision. It had been drawn into the popliteal space by the gastrocnemius muscle. An inch was also removed from the lower fragment and reduction was easily effected. Holes were drilled in the end of each fragment with a Brainerd hand-drill to the medullary canal and a silver wire a tenth of an inch in thickness—sufficiently strong to withstand the action of the muscles of the thigh—was passed through the holes made by the drill, twisted four times, cut short and hammered down on the shaft of the femur to be inclosed by callus. Only one suture was used, and it held the bones in perfect apposition. No ligatures were needed, as there was very little bleeding. After the removal of the Esmarch bandage blood oozed very freely for some minutes, but the oozing soon subsided after irrigating with a very hot bichloride solution for five minutes. The incision was closed with eight sutures, an inch apart. Heavy braided antiseptic silk, well waxed, was used, and the sutures were passed deep through all the tissues. Three strands of coarse catgut were inserted at each end of the incision, for drainage. Catgut was used for the superficial sutures. An ordinary antiseptic dressing was then applied. Heavy binder's board was molded to the limb, and a long side splint applied without any extension. The temperature was taken morning and evening, and did not rise above 100° F. at any time. There was perfect freedom from pain. The dressing was not disturbed for fifteen days, when the wound was found united throughout without the formation of any pus. Twenty-one days after the operation the long side splint was removed and a plaster bandage inclosing the pelvis applied without disturbing the binder's-board coaptation splints.

It is seven weeks since the operation, and patient has been walking on crutches for ten days, his general condition is greatly improved, he has a good appetite, and is gaining flesh rapidly. His leg will be about two inches short. He has firm union, but has muscular ankylosis at the knee joint, which we may be able to break up hereafter.

The Medico-legal Society.—At the next meeting, on Wednesday evening, the 9th inst., Dr. Joseph Jones, of New Orleans, will read a paper on The Micro-chemical Examination of Human Blood, and Mr. Frank P. Norbury will read one on Criminal Responsibility in the Earlier Stages of General Paresis.

"**Thiolinic Acid,**" says the *British and Colonial Druggist*, "is now added to the list of sulphur preparations, such as thiol, thilanin, and tumenol, which are intended to replace ichthyol. The process of its manufacture is patented, and consists in heating six parts of linseed oil with one part of sulphur to about 230° C., when the formation of gas sets in. This 'thiolin oil' is then treated with twice its weight of concentrated sulphuric acid and warmed until a complete solution is effected. The product is then poured into water and freed from the adherent sulphuric acid by washing. When finished, it is an incoherent, dark-green mass, assuming, when warm, an extract-like consistence. It is soluble in alcohol, but not in water. Thiolinic acid contains 14·2 per cent. of sulphur. The alkali salts of this acid are soluble in water, which gives them a val not possessed by the acid."

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IMPORTED PAPER RAGS AND INFECTIOUS DISEASES.

In the discussion on the report of a special committee on infected rags at the meeting of the American Public Health Association in 1885 Dr. John S. Billings said: "There is evidence that the rags collected in this country have produced and given rise to small-pox, but I say that there is no evidence that baled imported rags have been the cause of disease in this country. I want to see the evidence of it, and I protest against a member of the association being compelled to vote on the resolution reported by the committee when the evidence and details are not submitted. If boards of public health are going to be a success in this country, you have got to consider the interests of the commercial class." This statement was corroborated by Dr. H. P. Walcott, of the Massachusetts State Board of Health, a State that probably uses more baled rags than any other in the Union. As a result of the discussion the report was referred back to the committee for further consideration.

In the following year, 1886, the committee made an elaborate report in which quite a number of cases were cited of small-pox outbreaks due to rags, but no evidence was presented that these rags had been imported, and Dr. Billings's statement remained unrefuted.

In the *Eighteenth Annual Report of the State Board of Health of Massachusetts* Dr. Charles F. Withington published the most complete study on the transmission of infectious diseases through the medium of rags that has appeared in this country. He showed that small-pox had been transmitted through the medium of rags in a certain number of cases—a number that was small in proportion to the whole number of persons handling rags—and that persons who had been vaccinated would not be endangered by this disease. The statement that cholera had been transmitted by paper rags rested upon a solitary case regarding which eminent authorities entertained grave doubts, and, if the case was accepted as authentic, the infection was due to domestic rags. Koch has examined the reported facts in a number of instances of alleged cholera infection through the medium of rags, and has declared them all to be fallacious.

Dr. Withington states that authenticated instances are not to be found in which typhus fever, typhoid fever, scarlet fever, measles, or diphtheria has been transmitted through paper rags. Moreover, the mortality statistics of paper-making towns do not show a preponderance of deaths from these diseases.

The duration of the viability of pathogenic micro-organisms is not known, but it is probably dependent upon the presence or absence of light, air, and moisture, as well as of the existence of a nutrient substance. The question therefore arises whether the time in which the rags are kept in bulk and are in passage across the oceans is not sufficient to accomplish the destruction of specific micro-organisms, either by the causes above mentioned or by the ordinary micro-organisms of putrefaction. The single paper that has appeared on a bacteriological examination of rags affords negative evidence.

The question therefore arises, whether we are justified in imposing a heavy restriction on paper-manufacturing, in view of the evidence we now possess.

There is no evidence in any library in this country that will show that Asiatic cholera has ever been introduced by imported rags, and a frank negative answer might have been given by the medical advisory committee of the Chamber of Commerce to the chairman of the Committee of the American Paper-Manufacturers' Association. The chamber's committee could have stated that its recommendation had been based upon the action taken by England in the premises, as well as the recommendation of the more recent sanitary conferences, and that, as clothing and domestic rags had served as the media for the transmission of the infectious diseases, over-caution seemed more desirable than under-caution.

The question is an unsettled one, and can only be decided when the bacteriologist has shown the duration of the viability of pathogenic micro-organisms under the conditions we have specified. But hasty action is to be deprecated for the excellent reason given by Dr. Billings, that boards of health and sanitation in general will only be successful when they consider the interests of every class in the community.

THE TRANSFUSION OF NERVOUS MATTER IN THE INSANE.

Dr. Constantin Paul has called attention, in a recently published memoir on the subject, to the value of what he calls nervous transfusion in the treatment of neurasthenia. The substance employed is the gray matter of the brain of a recently slaughtered sheep, allowed to macerate for twenty-four hours in twice its weight of pure glycerin, to which is subsequently added an equal quantity of boiled water. This is filtered, as well as prepared with all antiseptic precautions, and should be a clear, limpid, colorless, sterile liquid that will keep for a week with ordinary precautions. A drachm of this liquid is injected every second day into the thigh or the lumbar region, after the skin, syringe, and needle have been carefully disinfected. The injected liquid forms a small tumor that usually disappears within twenty-four hours.

In the *Gazette médicale de Paris* for August 27th Dr. A. Cullerre reports the results that he has obtained with this substance in fourteen cases of insanity. In eight patients the results were good, in four there was a slight influence produced, and in two there was no effect. The author concludes that these transfusions are beneficial in asthenic as well as in tuberculous insane patients, and that they arouse the nutritive functions almost instantly. One of the first evidences of this result is an increase of appetite, a most desirable result in mental alienation, to combat sitiophobia. The reconstructive effects are rapid, muscular weakness disappears, the flesh increases, and all the organic functions are regulated. The psychopathic state in curable cases has been transitorily improved during a few hours immediately following the injections, but this improvement has not persisted. The author does not consider this conclusion definitive, as the major portion of his patients were incurably insane, and it is the rule in the curable forms of insanity for improvement in the mental condition to keep pace with nutritive improvement.

MINOR PARAGRAPHS.

THE INCREASE OF INEBRIETY AMONG WOMEN.

Referring to the steady extension of drunkenness among women, the *British Medical Journal* for October 1st states that, while it was a rare sight twenty years ago to see a woman drinking at a public bar, of late both women and girls have the habit of making weekly rounds of gin shops until they become drunk. The commitments of previously convicted female offenders rose from 5,673 in 1878 to 9,451 in 1884 in England and Wales. The proportion of male to female prisoners used to be seven to one, and it is now three to one. In London the number of women convicted for drunkenness increased 500 in a single year, while there were 8,373 arrests for being "drunk, etc." In Ireland one woman has been apprehended on no fewer than 700 different occasions, though she is not yet forty years old; and from two to seven per cent. of all the female drunkards in that country have been convicted from one to six hundred times. The frequent systemic perturbation which involves acute suffering to so many women from functional crises peculiar to the sex is perhaps responsible for the largest number of cases of inebriety from any single cause. Transmission of the inebriety diathesis, of some other exchangeable neurosis, and of mental instability comes next. Mental or physical overwork, household and family worry, the neurasthenia of other diseases, too frequent parturition, idleness, and selfish indulgence are all factors in causing this increase. It is considered that there is an uncontrollable impulse in those having defective will power, and, as punishment by incarceration does not cure, it is suggested that such persons be isolated in a properly equipped medical institution.

ALBUMINURIA.

A recent discussion of this subject before the French Academy of Medicine brought out some interesting points that are given briefly in the *Revue générale de clinique et de thérapeutique* for October 5, 1892. Albuminuria in itself is not a serious thing, for it often exists in gouty or rheumatic conditions, in nervous diabetes, and in obesity. It is the retention of excrementitious matter that is dangerous. While there are no antidotes for uræmia, the tendency can be greatly modified by the use of drastics, diuretics, and cutaneous stimulants. So Lancereaux believes and teaches. The uræmic attack over, whatever tissue is most affected must receive special attention. If it is connective tissue, iodide of potassium is prescribed; if renal epithelium, then tincture of cantharides, from six to twelve drops daily, to produce free diuresis and relieve anasarca. He considers a mixed diet best, without much nitrogenous food, and prefers beer to wine. In albuminuria there is stasis in the renal circulation. There is always direct or indirect involvement of the kidney. Pancreatic diabetes is never complicated with albuminuria, which is a symptom independent of glycosuria. In constitutional diabetes albuminuria is a late symptom; in diabetes of neurotic origin it is transitory and intermittent. That stout persons often have a weak or diseased heart was emphasized by Germain Sée. Hydrotherapy, fatiguing exercise, and semi-starvation are too often prescribed with unfortunate sequelæ. Exceptions having been taken to Lancereaux's views, he spoke for a second time in favor of cantharides, a remedy that gives brilliant results when the lesion of the kidney is in the epithelium.

THE INFLUENCE OF VARIATIONS IN PULMONARY CIRCULATION UPON RESPIRATION.

The *Revue générale de médecine, de chirurgie et d'obstétrique* for July 13, 1892, contains conclusions resulting from M. Grossman's experiments on dogs. In dogs breathing normally and in those poisoned by curare where artificial respiration is made use of, tumefaction and rigidity of the pulmonary parenchyma occur when there is interference with the circulation of the blood within the lung. In natural respiration this swelling of the lungs results in a passive increase in the size of the thorax. Rigidity of the pulmonary parenchyma results in restriction of the diaphragmatic movements, in dyspnœic respiratory efforts, and in lessened usefulness of respiratory action. Diminution of the flow of blood to the lungs results in diminution of their volume and relaxation of their substance, in both normal and artificial respiration. Diminution in volume brings about a passive lessening of thoracic capacity. The relaxation of the pulmonary parenchyma increases the amplitude of the pulmonary movements and notably augments the useful effect of respiratory action. When the lungs are the seat of stagnation of blood, the respiratory center is in a state of dyspnœa, and it is in a state of apnœa when the lungs are exsanguinated. The author defines dyspnœic asthma as a state in which exaggeration of respiratory efforts is not accompanied by correlative increase in the amount of air inhaled.

RECTAL IRRIGATION FOR THE RELIEF OF PELVIC AND ABDOMINAL PAIN.

In the *Journal d'accouchements* for June 15, 1892, Forez states that irrigation of the large intestine with hot water serves admirably for the relief of the pain of nephritic or hepatic colic, of ovarian neuralgia, of phlegmon of the broad ligament, of pelvic peritonitis, and of dysmenorrhœa, even in instances where moderate doses of morphine fail. The patient is placed in Sims's posture, and about a quart of hot water is injected slowly into the rectum and retained for five minutes. Its expulsion brings away masses of fæcal matter. Then a greater quantity of hot water is thrown in and retained as long as possible, serving as a tepid bath or internal poultice to the surrounding parts. Its analgesic effect is wonderful, to say nothing of the distinct antiphlogistic power hot water thus used seems to possess. A third injection, of a pint of the liquid, is retained. Alkaline salts, such as those of sodium or lithium, may be added to the water, or natural mineral waters may be used. Whoever imagines that this is in any way a new contribution to therapeutics is referred to Dr. James R. Chadwick's article on The Hot Rectal Douche, in the fifth volume of the *Transactions of the American Gynæcological Society*, for the year 1880.

CLINICAL FORMS OF TUBERCULOSIS IN CHILDREN.

In the *Revue mensuelle des maladies des enfants* for July, 1892, Aviragnet gives a list of the clinical forms of tuberculosis in children. One, already noted by Landouzy and Queyrat, is subacute infectious tubercular fever, an infectious fever without distinct pulmonary manifestations. Death occurs in a few days, and the autopsy fails to reveal in any organ lesions sufficient in themselves to have caused death. Typho-tuberculosis, or continued tubercular fever, begins as a dothienenteritis, and is usually secondary to chronic localized tuberculosis. Recovery is the rule. General acute (granular) tuberculosis occurs in children as well as grown persons. Subacute general tuberculosis may be the result of the foregoing forms or follow tubercular bronchopneumonia. There are ulcerative lesions in the lung. The condition and course are those of ordinary chronic tuberculosis, with more marked fever and more rapid progress. Another form is chronic general or localized tuberculosis.

PIPERAZINE AND URIC ACID.

Biesenthal, of Berlin, affirms that the consensus of opinion is in favor of the use of piperazine in recent cases of gout, and that even in chronic forms of the disease its action is almost always favorable. Continued small doses—from fifteen to forty-five grains a week—constitute a sure prophylactic. The remedy has proved valuable in renal colic and in hæmorrhage from the urinary tract. The last-mentioned disorder, even when of years' standing, has been entirely relieved.

GOÎTRE AND CRETINISM IN THE CENTRAL PYRENEES.

In *Le Mercredi médical* for October 5, 1892, Chopinet calls attention to the fact that goître and cretinism exist more frequently in the depths of valleys than at their entrance, dampness, uncleanliness, absence of solar light, and poor food being the chief factors in the pathogenesis. These two conditions are diseases of squalor, and disappear utterly in certain villages with the progress of material comfort and hygiene. Liassic clay-slate seems to be the only possible geological cause.

THE INFLUENCE OF COSTUME IN THE PRODUCTION OF FLOATING KIDNEY.

In the *Journal de médecine de Paris* for July 3, 1892, Karayni's views are given concerning costume as a factor in floating kidney in woman. The corset has before been arraigned as a cause, but the writer considers it rather a sanitary aid than otherwise, since it contributes toward throwing the weight of garments upon the upper half of the body. High heels and heavy clothing destroy the normal center of gravity, increase the lumbar curve, and throw the kidneys forward and downward.

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending November 1, 1892:

DISEASES.	Week ending Oct. 25.		Week ending Nov. 1.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	0	0	0	0
Typhoid fever	49	12	26	11
Scarlet fever	61	6	56	6
Cerebro-spinal meningitis	2	3	0	0
Measles	46	3	43	7
Diphtheria	67	17	80	28
Small-pox	11	0	16	4

The New York Academy of Medicine.—At the next meeting of the Section in Genito-urinary Surgery, on Thursday evening, the 10th inst., Dr. James P. Tuttle will read a paper on The Treatment of Ano-rectal Fistulæ.

At the next meeting of the Section in General Surgery, on Monday evening, the 14th inst., Dr. J. A. Wyeth will read a paper on Lesions of the Appendix Vermiformis and Cæcum demanding Surgical Interference; and Dr. J. H. Girdner will read one on The Improved Telephonic Bullet Probe.

At the next meeting of the Section in Ophthalmology and Otology, on Monday evening, the 21st inst., Dr. John E. Weeks will read a paper on Restoration of the Integument of the Lids by Means of a Flap without a Pedicle; and Dr. H. D. Schwarzschild will read one on Ophthalmic Methods as observed in the Clinics of Europe.

The Richmond Academy of Medicine and Surgery.—At the next meeting, on Tuesday evening, the 8th inst., the discussion of cholera will be concluded.

The University of Vermont.—Dr. William C. Jarvis, of New York, has been elected professor of laryngology in the medical department.

The Pan-American Medical Congress.—Dr. J. Collins Warren, of the Harvard Medical School, has accepted the executive presidency of the Section in Medical Pedagogics.

Changes of Address.—Dr. John Bacon, to Haddonfield, N. J.; Dr. Carl Koller, to No. 32 East Sixtieth Street; Dr. George Woolsey, to No. 117 East Thirty-sixth Street.

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from October 16 to October 29, 1892:*

Deshon, George D., First Lieutenant and Assistant Surgeon, is relieved from duty at Columbus Barracks, Ohio, and will report in person to the commanding officer, Fort D. A. Russell, Wyoming.

Swift, Eugene L., Captain and Assistant Surgeon. So much of S. O. 230 as relates to change of station is suspended until further orders, and he is granted leave of absence for one month, on account of sickness, with permission to apply for an extension of one month.

Morris, Edward R., Captain and Assistant Surgeon, is relieved from duty at Fort Custer, Montana, and will report in person for duty to the commanding officer, Fort Warren, Massachusetts, relieving Egan, Peter R., Captain and Assistant Surgeon.

Captain Egan, on being relieved by Captain Morris, will report in person to the commanding officer, Fort Custer, Montana, for duty at that post.

Smith, Allen M., First Lieutenant and Assistant Surgeon, is relieved from further duty at Fort Yellowstone, Wyoming, and will proceed to Fort Custer, Montana, and report to the commanding officer of that post for temporary duty.

Smith, Allen M., First Lieutenant and Assistant Surgeon, is relieved from further duty at Fort Assiniboine, Montana, and assigned to duty at Fort Custer, Montana, where he has already been ordered to temporary duty.

Purviance, William E., First Lieutenant and Assistant Surgeon, is relieved from duty at Jefferson Barracks, Missouri, and will report in person to the commanding officer, Fort Sherman, Idaho, for duty at that post, relieving Gray, William W., Captain and Assistant Surgeon.

Captain Gray, on being relieved by Lieutenant Purviance, will report in person to the commanding officer, Fort Schuyler, New York, for duty at that post.

Happersett, John C. J., Major and Surgeon, is relieved from duty at Fort Custer, Montana, and will report in person to the commanding officer, Fort Keogh, Montana, for duty at that post, relieving Harvey, Philip F., Major and Surgeon.

Major Harvey, on being relieved from duty by Major Happersett, will repair to West Point, N. Y., and report in person to the superintendent of the U. S. Military Academy for duty at that post, relieving McElderry, Henry, Major and Surgeon.

Major McElderry, on being relieved by Major Harvey, will repair to Omaha, Neb., and report in person to the commanding general, Department of the Platte, for duty as attending surgeon, and will attend to the duties of examiner of recruits at Omaha.

Dunlop, Samuel R., First Lieutenant and Assistant Surgeon. The leave of absence granted is extended one month.

Greenleaf, Charles R., Lieutenant-Colonel and Deputy Surgeon-General, is appointed member of a board of officers, to meet at Helena, Mont., on the first day of November, 1892, or as soon thereafter as practicable, for the purpose of selecting a site for a military post at that place, as provided for under an act of Congress approved May 12, 1892, entitled "An Act to establish a military post at or near the city of Helena, in Lewis and Clarke County, in the State of Montana."

Middleton, John V. D., Major and Surgeon, is granted leave of absence for one month, to take effect upon his relief from duty at Fort Columbus, N. Y.

Walker, Freeman V., Captain and Assistant Surgeon, is granted leave of absence for one month, to take effect on the arrival of De Shon, George D., First Lieutenant and Assistant Surgeon, at Fort D. A. Russell, Wyoming.

Society Meetings for the Coming Week:

Monday, *November 7th:* New York Academy of Sciences (Section in Biology); German Medical Society of the City of New York; Morrisania Medical Society (private); Brooklyn Anatomical and Surgical Society (private); Utica Medical Library Association; Corning, N. Y., Academy of Medicine; Boston Society for Medical Observation; St. Albans, Vt., Medical Association; Providence, R. I., Medical Association; Hartford, Conn., Medical Society; Chicago Medical Society; South Pittsburgh, Pa., Medical Society.

Tuesday, *November 8th:* New York Medical Union (private); Kings County Medical Association; Medical Society of the County of Rensselaer, N. Y.; Newark, N. J., and Trenton (private), N. J., Medical Associations; Camden, N. J., County Medical Society (semi-annual—Camden); Norfolk, Mass., District Medical Society (Hyde Park); Baltimore Gynæcological and Obstetrical Society; Northwestern Medical Society of Philadelphia; Richmond (Va.) Academy of Medicine and Surgery.

Wednesday, *November 9th:* New York Surgical Society; New York Pathological Society; American Microscopical Society of the City of New York; Medical Society of the County of Albany; Pittsfield, Mass., Medical Association (private); Worcester, Mass., District Medical Society (Worcester); Philadelphia County Medical Society.

Thursday, *November 10th:* New York Physicians' Mutual Aid Association (annual); New York Academy of Medicine (Section in Pædiatrics); New York Academy of Medicine (Section in Genito-urinary Surgery); Society of Medical Jurisprudence and State Medicine; Brooklyn Pathological Society; Medical Society of the County of Cayuga, N. Y.; South Boston, Mass., Medical Club (private); Pathological Society of Philadelphia.

Friday, *November 11th:* Yorkville Medical Association (private); German Medical Society of Brooklyn; Medical Society of the Town of Saugerties; Brooklyn Dermatological and Genito-urinary Society (private).

Saturday, *November 12th:* Obstetrical Society of Boston (private).

Letters to the Editor.

RAGS AND CHOLERA.

New York, *October 29, 1892.*

To the Editor of the New York Medical Journal:

Sir: In your issue of to-day Mr. Augustine Smith republishes two letters of his which previously appeared in the *Paper-Trade Journal* for October 1st, p. 880, adding a third one also addressed to Dr. Allan McLane Hamilton, and—it is to be hoped with the doctor's permission—the latter's brief reply. From the same number of the *Paper-Trade Journal* Mr. Smith might have copied some editorial remarks referring to the "dicta of so-called medical experts, who have acted in an arbitrary, harsh, and inconsistent manner, wholly at variance with the facts." Dr. Hamilton, as the secretary of the Advisory Medical Committee of the Chamber of Commerce, to whom the letters were addressed, does not appear to have felt under obligation to answer them otherwise than by referring Mr. Smith to the literature of the subject, and is told that he "evades the question and attempts to side-track it, as has been done on other similar occasions." The editorialist also desires "that some evidence shall be produced before they (the rag importers) are subjected to imposition under senseless regulations."

Now, Mr. Editor, Dr. Hamilton, if he had chosen to do so, might have been a little more explicit and mentioned some literature. If you will turn to the *Transactions of the Public Health Association*, particularly to vol. xii, you will find more references than appear to have been accessible to Mr. Smith. On page 180 the Austrian delegate to the International Sanitary Conference of Rome (1885) "holds rags which come from regions infected with cholera extremely dangerous." On page 190 we learn that the Sanitary Congress of the Hague (1884) pronounced rags "a danger national and international." In the *résumé* and literature contained on page 189 we are informed that a severe cholera epidemic was carried to Solothurn, Switzerland, by rags delivered to its paper mills from a distant cholera district.

I have not yet seen the *Transactions of the Seventh International Congress of Hygiene and Demography*, held in London in 1891, but its proceedings have been carefully abstracted in the *Revue d'hygiène et de police sanitaire*, août-septembre, 1891. On page 685 we read as follows: "Dr. Vicente Caballo (of Madrid) details the facts witnessed by him in the course of a mission he was charged with to study the last cholera epidemic of Spain. The origin of this epidemic was the smuggling into Spain, by way of Toulon and Marseilles, of old clothing and linen for the use of the paper mills injured by the decree forbidding that traffic during the prevalence, in France, of the epidemic."

A. Jacobi, M. D.

SUMMER DIARRHŒA.

137 East Nineteenth Street, *October 29, 1892.*

To the Editor of the New York Medical Journal:

Sir: In the *New York Medical Journal* of September 10th and 17th, in an article on Summer Complaint, Dr. H. Illoway, of Cincinnati, in speaking of my investigations regarding Cholera Infantum and the Weather (*Med. Record*, March 24, 1888), states on page 317 that one of my conclusions "is based upon *erroneous method of study*," giving the reader to understand, through a lengthy quotation of Dr. Clark Miller, that I had only made use of *monthly* records, means and averages, in my work.

To place this criticism in its true light I will here, with your kind permission, but cite a few words from my above-mentioned and criticised article: "Six years ago I first pointed out the necessity of careful detail work for investigations of this kind, and demonstrated the doubtful value of monthly means, averages, and sums (*Am. Jour. of the Med. Sci.*, January, 1882). . . . So now we will return to the temperature and *go into detail.*"

For the better understanding of this, I will further mention here that this quotation of mine is found at the end of the first half of my article, so far devoted only to demonstrating the fallacy of working *only* with monthly records. The second half of my report tells of how I used the weather statistics of each day and the meteorological reports of *three daily observations for each day of ten years.* In fact, I was the first to use daily observations in investigations of this kind (*Am. Jour. of the Med. Sci.*, January, 1882; *Berlin. klin. Woch.*, Nos. 18 and 19, 1884, and No. 17, 1886).

Besides the above-mentioned reference to my article I have counted fifty-six quotations of other authors in this article of Dr. Illoway's. In the interest of these authors and the readers it is to be hoped that these references at least are in accord with facts. As to one of them, the belief of Dr. Illoway that Baginski, in his *Verdauungskrankheiten der Kinder*, 1884, referred to Seibert's charts on Cholera Infantum and the Weather, I am, as a personal friend and but very recent guest of the Berlin authority, in duty bound to destroy. Baginski's remark about American charts was published in 1884, and my charts were published in 1888.

It is left to others to give a name to such scientific criticism

A. Seibert, M. D.

Reports on the Progress of Medicine.

PUBLIC HEALTH, MEDICAL AND VITAL STATISTICS, ETC.

By S. T. Armstrong, M. D., Ph. D.,

SECRETARY OF THE SECTION IN PUBLIC HEALTH, ETC., OF THE NEW YORK ACADEMY OF MEDICINE.

Corporate Construction of Dwellings for the Poor.—Sir C. A. Cameron says, in a paper on the Victorian Era, the Age of Sanitation (*Dublin Jour. of Med. Sci.*, October, 1892), that the construction of improved dwellings for artisans may be left to the building societies and to private enterprise; but, if the taxpayer's money is expended in constructing dwellings for the people who can pay only the lowest weekly rentals, it will be well invested, because it tends to diminish sickness, death, and pauperism. He concedes the difficulties, financial and other, in the way of substituting clean and moderately comfortable dwellings for the filthy dens in which five per cent., at least, of the urban population dwell. As corporations can borrow money at a low rate of interest, if they adopt good schemes for the erection of laborers' dwellings they might provide low-renting apartments without incurring a heavy investment. In 1890 the Corporation of Dublin erected eighty six dwellings for laborers. Each dwelling was a two-story house containing four tenements. Each of the latter consisted of a living room 12⅝ by 12 feet, a bedroom 10½ by 7½ feet, and a scullery and other acommodation belonging exclusively to the tenement. Nineteen such tenements were rented for two shillings a week, and the total rental paid an annual installment on the loan together with the interest, and there was a surplus of nearly a hundred pounds a year. In thirty-eight years the loan will be repaid and the corporation will own the houses. He contrasts this exhibit with that of four streets in Dublin in which 1,074 families reside in 174 houses containing 1,482 rooms, less than a room and a half to a family. The annual rental (£8,311) paid by the tenants was more than three times the taxation value (£2,677) of the houses. So he considers that in Dublin the rents of the dwellings of the working classes are far in excess of their real value.

When it is remembered that the disproportion existing between urban and rural mortality is in part due to the wretched habitations provided for the poor in cities, it will be seen that improvement in their habitations may serve to reduce the higher rate of urban mortality. The author calls attention to the fact that, while the general death-rate to a thousand living is in England 19·19, in twenty-eight of the largest English cities it is 23 to a thousand. The reduction of the latter death-rate in those towns to the same figure as the general death-rate would, he says, mean a saving of 380,000 lives in a single decade.

Cholera in Russia.—In a leading article in this *Journal* for August 30, 1892, a brief summary was given of the progress of cholera in Persia, the Caucasus, and Russia, and doubt was then expressed regarding Russia's competency to handle the epidemic. Subsequent events have more than realized the predictions then made, disclosing, besides, a weak point at Hamburg, that was then supposed to be in a good sanitary condition.

In the *Abstract of Sanitary Reports* for October 14th the United States Consul at Batoum publishes the "official" Russian statistics. "The cholera may be said to have first appeared in Russia in the town of Baku (into which place it was brought over from Persia), the first case being reported on the 6th and 18th of June last. As practically no restrictions were placed in the shape of quarantine, disinfecting or other measures, upon people leaving Baku, it is not surprising that the epidemic has spread over the whole of Russia and been also conveyed into many other European countries.

"The figures given below are far from correct, inasmuch as they do not include the death-rate and number of cases among the soldiers, and many of the district governors have, from time to time, omitted sending in their reports. The totals from July 6–18 to August 1–13 for the Caucasus are as follows:

Localities.	No. of days.	Attacked.	Deaths.	Per cent. of deaths.
Baku town (from June 18)	56	2,501	1,934	77·7
Baku government (from June 29)	46	4,714	3,210	68·1
Tiflis town (from June 11)	51	408	188	46·3
Tiflis government (from July 20)	24	1,710	877	51·2
Elizabethpol government (from June 25)	49	5,486	2,885	52·6
Dagestan district (from June 30)	44	12,559	5,674	45·6
Erivan government (from July 19)	25	2,644	1,431	54·1
Koutais government (from July 24)	20	90	45	50·0
Takatal district (from July 28)	16	212	133	62·7
Kars district (from July 29)	15	483	245	50·6
Vladi-Kavkas town (from July 24)	20	719	308	42·8
Terek district (from July 8)	36	16,450	8,039	48·8
Kooban district (from July 9)	35	7,161	3,611	50·4
Stavropol government (from July 22)	22	5,819	3,208	55·1

"Below I give the daily average of deaths and cases for the periods mentioned above, and from which it is seen that the epidemic was felt chiefly in the Terek and Dagestan districts, especially in the former among the villages along the banks of the rivers Terek and Soonjen.

"The least number of cases of and deaths from cholera was in the government of Koutais, of which Batoum is a district town.

"*Daily Average of Cases and Deaths.*

Localities.	Cases.	Deaths.
Baku town	45	34
Baku government	105	71
Tiflis town	7	3
Tiflis government	71	36
Elizabethpol government	112	59
Dagestan district	285	132
Erivan government	106	57
Koutais government	2	2
Takatal district	13	8
Kars district	32	16
Vladi-Kavkas town	36	15
Terek district	457	223
Kooban district	205	109
Stavropol government	262	146

"The percentage of cases and deaths from cholera in the Caucasus per one hundred inhabitants of both sexes are as follows:

Localities.	Per cent. of cases.	Per cent. of deaths per 100 inhabitants.
Terek district (without Vladi-Kavkas)	2·3	1·1
Dagestan district	2·1	0·9
Stavropol government	0·9	0·5
Baku government (without Baku)	0·7	0·5
Elizabethpol government	0·7	0·4
Kooban district	0·6	0·3
Erivan government	0·4	0·2
Kars district	0·4	0·2
Takatal district	0·3	0·2
Tiflis government (without Tiflis)	0·2	0·1
Koutais government	0·01	0·01
Baku town	2·7	2·09
Vladi-Kavkas town	1·6	0·7
Tiflis town	0·3	0·1

"For the whole of the Caucasus the percentage of cholera amounts to eight per cent. and of deaths four per cent.

"Total number of deaths from cholera throughout Russia from June 18 to September 1, 1892: The Caucasus in general, 53,159; district of the Don, 14,592; Saratoff government, 10,297; Samara government, 9,728; Transcaspia, 9,465; Astrakhan government, 7,541; Tobolsk government, 7,358; Voronej government, 4,726; Simbirsk government, 3,702; Viatka government, 2,885; Tamboff government, 2,413; Orenburg government, 2,391; Kazan government, 1,854; Ouralsk district, 1,744; Tomsk government, 1,559; Nijni Novgorod government, 1,340; different points in Siberia, 1,198; Oufa government, 940; Penza government, 919; Kursk government, 796; Perm government, 675; St. Petersburg, town, 604; Riazan government, 335; Yaroslavl government, 292; Ekaterinoslav government, 291; Moscow government, 204; Poltava government, 193; Orel government, 168; St. Petersburg government, 118; Vladimir government, 100; Lyublin government, 91; Tawris government, 94; Toola government, 80; Kostroma government, 82; Kherson government, 46; Chernigoff government, 28; Kieff government, 16; Tver government, 8; Novgorod government, 1; Kharkoff government, 2,057; total, 144,090."

These are rather under than over stated. Bad, however, as the Russian administration may be, we can not but ask how much longer India will be permitted to remain a pestilential menace to the world?

Albuminuria and Life-insurance Examinations.—Dr. Brandreth Symonds published in *The New York Medical Examiner* for August a paper on Albuminuria, Functional or Organic, Temporary or Permanent. He examined over three thousand rejected applicants and wrote a large number of letters to obtain information regarding the subsequent history of applicants who had been rejected on account of the presence of albuminuria by the Mutual Life Insurance Company. He obtained definite information regarding forty-four persons, thirty of whom were living and fourteen dead. Unfortunately, Dr. Symonds does not state either the total number of rejected applicants that were examined, or the total of those rejected on account of the existence of albumin in the urine; so the proportion these forty-four cases bear to the former is unknown. He has classified these cases in two tables that, he considers, do not indicate any means by which the cases of harmless albuminuria may be separated from those in which it is detrimental. In every fatal case the applicant was examined at the age of forty or over, although two of these applicants lived to within two years of their expectation of life at the time of examination. Of the thirty applicants still living when Dr. Symonds made his study, over fifty per cent. were forty years old and over when originally examined, and all of the thirty had lived from eleven to sixteen years after the original examination, with the promise of continued good health. Thirty per cent. of the number were insured in other companies after their rejection by the Mutual. A third table, giving the deaths from albuminuria occurring among the insured, with the expectation of life at the time their applications were accepted, and the time they had lived subsequent to their acceptance, would have afforded an interesting comparison with the preceding tables. Such a table is especially desirable, because the original examinations were made by competent men, and yet a larger number (sixteen) of persons having albuminuria at forty years of age were living at the time Dr. Symonds made his investigation than had died of the disease during the period mentioned.

Tuberculosis in Munich.—According to the *British Medical Journal* for September 24, 1892, Dr. Weitemeyer has made a study of the mortality statistics of Munich between 1814 and 1888. During those seventy-five years there were 329,862 deaths, of which 47,282, or 14·33 per cent., were caused by tuberculosis. The proportion of deaths from tuberculosis to those from other diseases showed some variation at different periods; thus, while it was 15·34 per cent. during the first twenty-five years of the period mentioned, it was 14·93 per cent. during the second, and 13·71 during the third. But this decrease in the mortality is only apparent, for, if the deaths from tuberculosis are compared with the population for the different periods instead of with the deaths from other diseases, it is found that the death-rate from tubercle remained fairly constant at about 4·7 to a thousand throughout the whole period of seventy-five years.

The Sterilization of Water.—Dr. V. Babès and Dr. A. Babès (*Le Mercredi médical*, No. 28, 1892) have presented a paper to the Académie de médecine on the sterilization of water. They refer to the well-known difficulty of obtaining water free from germs. Boiling gives water a dead taste and deprives it of its gas; the different filters, which may succeed in giving pure water when they are surrounded by all the precautions of the laboratory, are far from offering all the guarantees desirable when they are employed in the household or when their care is intrusted to the cook. Whatever may be the composition of the filter—porcelain, asbestos, charcoal, etc.—when it is not properly cared for it eventually yields water containing as many microbes as the unfiltered water, or more. They have applied to the problem of the purification of drinking-water the principle of the precipitation of the corpuscular elements in suspension in the water, using many substances, such as alum, iron, etc. Powdered alum mixed in water that is allowed to stand for twenty-four hours in a cool place produces an absolutely clear water that is bacteriologically sterile. If one, one and a half, or two decigrammes of alum were added to each litre of water containing 1,200 germs to the cubic centimetre, it became clear after twelve hours' standing; and in a long vessel it was found that the number of bacteria to the cubic centimetre varied from fifty at the surface to none a few inches below the surface. The authors had imagined that a mixture of carbonate of calcium and alum would clarify water, but it did not destroy the microbes unless added in such quantities as to render the water alkaline and unfit for use. They ascertained that precipitation by iron facilitated the filtration of water by sand, the layer of oxide of iron retaining a portion of the microbes, but the water filtered by that layer contained fewer microbes, while after the filtration by sand it became turbid. Therefore the fact that water treated with iron and simply decanted became sterile did away with the necessity of any subsequent filtration, and the latter procedure only served to infect it. Profiting by this discovery, they prepared drinking-water by filtering a slow current (a litre in five minutes) through a column of iron filings a metre high. The water became clear in a few hours and contained no microbes after eighteen hours. They consider it easy to apply the procedure for domestic or municipal use.

Mill Dust as Bedding for Milch Cows.—The *British Medical Journal* for September 17, 1892, states that the sanitary authorities of Dundee have prohibited the use of mill dust as a bedding for cattle, on account of the predisposition of mill hands to consumption. The warm, moist, impure atmosphere in which nearly all mill operatives work weakens and injures the respiratory apparatus, and the mill dust is always liable to be contaminated with the sputum of consumptive operatives. As this dust may serve as the vehicle in conveying the tubercle bacillus from man to animals and to milk intended for human food, and as it would be almost impossible to keep the sawdust out of the milk pail when once placed in the stalls, it is not a suitable bedding for cows, notwithstanding its lower cost than straw. Besides, if the dust is uncontaminated when it is received, it is a good medium for being infected by a cow affected with tuberculosis. Between March, 1889, and April, 1892, one hundred and twelve dairy cows slaughtered in the Dundee abattoir were found to be suffering from tuberculosis; so the danger is not an imaginary one.

A Scarlet-fever Epidemic apparently originating in a Disease of Cows.—In the *British Medical Journal* for September 17, 1892, it is stated that in the southern district of Glasgow ten cases of scarlet fever appeared in the three days August 4th, 5th, and 6th, and all the affected persons had obtained milk from one purveyor. From the first date until August 12th, two hundred and twenty-four individuals were attacked, concerning whom the evidence pointed to one particular dairy as the source of the infection. The dairy proprietor was notified on August 6th, and on the 7th he learned that there was scarlet fever in the family on a farm from which he obtained milk. The supply of milk from that farm was at once stopped and the medical officers of health visited it on the 8th. They found that the business was conducted with scrupulous attention to cleanliness, and the dates of the appearance of scarlatina at the farm and in Glasgow were the same; so there was no causal relationship between them. The herd of cows numbered fifty-three. They were well nourished, but nearly all of them had suffered, and at the date of inspection many were still suffering, from an eruption on the teats. This is described as small and apparently insignificant and as not attracting the milkers' attention until tenderness makes the cows restive during milking. On close examination, a subcutaneous vesicle was found that contained a straw-colored serum. There was also a quasi-papular eruption with viscid, whitish contents, though in most of the animals the sore existed as a reddish-brown crust, blackening in the center, which could be detached without difficulty from a superficial ulceration. No areola surrounded the latter, and its margins were not raised. Several of the milkers had contracted sore hands from the teats. The herd was originally divided into two portions, and from that first affected the disease was apparently carried to the other portion.

The Relation of the Couveuse to Vital Statistics.—The *British Medical Journal* for August 20, 1892, cites a paper published (*Jour. des sages femmes*, July 16, 1892) by Mme. Henry, the head midwife to the Maternité of Paris, in which there are statistics showing that the use of the couveuse, with artificial feeding or gavage, had saved the lives of a large proportion of premature children born in the institution. The mortality of the infants before and after the introduction of this system is indicated in the foregoing table.

Stage of Pregnancy when the Child was born.	Mortality before the introduction of the couveuse.	Present mortality with the couveuse.
	Per cent.	Per cent.
6th month	100	81
6½ "	78·5	40
7th "	61	50·2
7½ "	46	23
8th "	22	11·2
8½ "	12	0·4

These results must be of value in France, where the recent statistics of marriages, births, and deaths have caused alarm.

The Suffocation of Infants.—Dr. Charles Templeman presents an interesting study (*Edinburgh Med. Jour.*, October, 1892) of 258 deaths of infants from overlaying that he had seen during ten years' practice as a police surgeon in Dundee. There were in all 399 cases of death from this cause; of those he saw, thirty-two per cent. occurred in illegitimate children. One sixth of the population of Dundee live in houses having only one room, and above two thirds of the inhabitants occupy houses of either one or two rooms. Three fourths of the cases of overlaying occurred in houses of one room. The parents were dissolute and lived amid squalor and filth. Forty-six per cent. (118) of the cases occurred between Saturday night and Sunday morning, and 159, or sixty-two per cent., occurred between October and March. The majority of cases occurred during the first three months of infantile life, and all occurred in children under nine months of age. Death is caused by the infant's face being firmly pressed against the mother's breast, thus mechanically obstructing the entrance of air to the lungs, or by the bedclothes firmly covering the child's face, or by the child being placed between its parents, and one of them, while asleep, turning over on it. The explanation of the larger mortality between Saturday night and Sunday morning is that the parents receive their wages on Saturday, indulge freely in drink, and go to bed intoxicated. The overcrowding from the members of a family huddling together to keep themselves warm accounts for the large percentage during the colder months. Regarding the possibility of the death being intentionally caused in order to obtain insurance on the infant's life, in only 28 cases in 100 was the child insured, and then only for paltry sums varying from $1.85 to $12.50. The author states that the number of deaths so caused is an important factor in infant mortality, and he thinks that a modification of the "grandmotherly" German law that prohibits a child under the age of two years from being allowed to occupy the same bed as its parent or nurse desirable for adoption. The law at present is powerless to reach such cases, no matter how great the suspicion of criminality may be.

Cemeteries in Relation to Public Health.—According to the *Revue des sciences médicales*, in consequence of there being no uniform legislation regarding cemeteries in Prussia, the government had Dr. Schœnfeld and Dr. Grandhomme consider the subject in all its aspects. Notwithstanding the defects of the actual state of affairs, no grave inconveniences had resulted from the establishment and administration of cemeteries. The sanitary office of the empire sought, for many years, for experience regarding the dangers that might arise from pathogenic germs contained in inhumated bodies. Whether in the case of zinc or in that of wooden coffins, it had never been possible to recover in the earth surrounding the coffins the species of bacteria that had infected the animal there buried. The spores of charbon, when buried, remain for a year capable of development; those of cholera are not resistant for more than two weeks; typhoid bacilli do not last over a month; and tubercle bacilli do not exist longer than three months. The process of the destruction of a cadaver in the soil may be divided into two phases. The first is putrid fermentation, that lasts as long as the body is sufficiently rich in water or as the latter is received from the neighboring soil. There is a process of reduction due to bacteria, consisting at first of a duplication of a molecule of albumin; this gives rise to the formation of fœtid gas and of ptomaines. The second phase is decomposition properly speaking, that begins when the water is lacking and the air has free access. This is a process of oxidation due to mold especially, and produces neither fœtid gas nor ptomaines, but only nitrates, sulphates, carbonic acid, and water. The committee concludes that the unpleasant influence of cemeteries is only evinced in the demonstrated inconveniences of odor and the accidents resulting from a descent into vaults in which carbonic acid has accumulated. It is not believed that there is a certain example of infectious diseases arising from cemeteries. In selecting a site for a cemetery, a dry, porous soil should be chosen. There should be regulations regarding the depth and area of graves, and family vaults should be avoided.

Meat Inspection in Belgium.—The *Lancet* for September 24th publishes the recent Belgian law providing for the inspection of meat, which "establishes special enactments to regulate the slaughtering of animals and the trade in meat and poultry. All animals, including pigs, destined to provide butcher's meat must be examined after they are slaughtered by an expert inspector nominated by the communal administration, or, in default, by the Government. Veterinary surgeons are to be selected in preference, but in districts where the services of such qualified persons are not available the expert inspector who is not a veterinary surgeon must call in a veterinary surgeon in all but certain specified cases. Local authorities may also decide that animals shall be examined before as well as after they are slaughtered. A slaughtered animal must be examined not later than twelve hours after its death in summer and twenty-four hours in winter. If the flesh of the animal is unwholesome, a written certificate must be given to this effect. If the meat is wholesome, various parts of the carcass must be stamped by the inspector. This practice, prevalent in France as well as in Belgium, affords a good and practical guarantee to the public. The purchaser, on entering a butcher's shop, has only to see if the meat bears the inspector's stamp. The purchaser then knows that the meat has been examined by an impartial and competent authority. When, on the contrary, the meat is condemned, no stamp is affixed, and it must at once be given over to those intrusted by the local authority with the duty of destroying such substances. But if the owner of the meat disputes the verdict of the inspector, he may call in a veterinary surgeon and have a counter-examination. In case of disagreement between the two experts, a third expert shall be appointed by the mayor of the locality to decide the matter. The fees and cost of such counter-examination are to be paid by the parties who are ultimately proved to be in the wrong. No cattle are to be slaughtered outside the slaughter-house, except in cases where a horse, mule, or donkey has met with an accident that renders its conveyance to the slaughter-house difficult. For horseflesh the inspector shall use a special stamp with the word 'horse' distinctly engraved upon it. All meats imported from abroad must come in entire carcasses or half carcasses, but with the lungs adhering. Such foreign meats must be examined and stamped by a veterinary surgeon before they can be sold. A record must be kept and produced whenever required, stating who sends and who is to receive the meat in question; and when such meat is sent from one district to another, the local authorities may again examine the meat, etc., before they allow it to be sold.

"In communal or public slaughter-houses the cost, including the inspector's fee, varies from 5*d.* to 1*s.* 3*d.* per 100 kilogrammes of meat. Calculated per head, the following are the maximum or minimum tariffs: For a horse, from 1*s.* to 4*s.*; a bull, 10*d.* to 4*s.* 10*d.*; a bullock, 10*d.* to 3*s.* 6*d.*; a cow, 10*d.* to 2*s.* 6*d.*; a heifer, 10*d.* to 2*s.*; calves, 5*d.* to 10*d.*; pigs or sheep, 5*d.* to 1*s.* 3*d.*; lambs, goats, sucking pigs, 2½*d.* to 5*d.* The local authorities must submit their tariffs to the provincial authorities, and these will be sanctioned by the king for a period of five years."

The Coloring of Oranges.—According to *Le Progrès médical*, a new industry has sprung up in Paris. It is that of transforming ordinary oranges into blood oranges by injecting into them Biebrich's scarlet, or rocelline, a harmless agent obtained from diazobenzol in a solution of β-naphthol.

The Height of Rooms.—According to the *Practitioner* for March, the English Local Government Board has addressed a memorandum to the sanitary authorities of England concerning the height of rooms used for habitation, a recent law having conferred upon them authority to regulate this matter. It is held that it is unnecessary to appoint a maximum height, but, as low-pitched rooms are more difficult to ventilate than rooms of greater height, especially sleeping-rooms in which the occupants are not able during sleep to vary the conditions of air-movement through the rooms, a minimum height should be established. While a room may have sufficient floor-space for a given number of people, whether this number will have enough breathing space to keep them in health will depend upon the height of the room. For example, if there is just enough breathing space when the height is eight feet, it is obvious that there will not be enough when the height is only seven feet. A minimum of nine feet is recommended, and the board will not approve of a smaller height than eight feet over the total area of the room. In a room of irregular height under the roof of a house there must be a mean height of eight feet.

Such a law does not seem to us to attain the desired end of the prevention of overcrowding; for, no matter how high a room may be, it is possible to so fill it with human beings that the breathing space will be inadequate for them, while a room less than eight feet high may be so well ventilated that the change of air compensates for the deficiency in cubic air space. Furthermore, in cold climates the difficulty for the poorer classes, for whose benefit this law was passed, to purchase enough fuel to heat their rooms and to keep them at a comfortable temperature has always led to the stuffing of every crevice and cranny through which air could enter, and the advantage of high ceilings is vitiated. If with such a law there was a provision defining the number of inhabitants to the minimum of cubic space the end desired might be attained, provided there was a sufficient number of inspectors to detect and punish violations of the law.

Cows' Milk in Relation to Human Health and Disease.—Dr. Henry E. Armstrong, the medical officer of health of Newcastle upon Tyne, concludes (*Practitioner*, March, 1892) that the value of the milk sold in the United Kingdom amounts to seventeen million pounds per annum; and, while the dietetic use of milk is to be encouraged, the consumer is entitled to insist upon its purity and wholesomeness. The quality of milk may be injured by the cow eating improper or poisonous vegetables, such as *Rhus toxicodendron*, *Colchicum autumnale*, etc.; by the cow being diseased; or by the contamination, infection, adulteration, or skimming of the milk after yield. Mr. Hutchinson Smee published some years ago the results he had obtained by exposing milk to sewer-gas. Such milk putrefied rapidly and caused, when tasted, severe headache and diarrhœa. So inattention to the sanitation of the cow-house and milk-house may result in contamination of the milk. Ten years ago the editor of the *British Medical Journal* showed that up to the date of his writing seventy-one epidemics in England had been traced to milk; fifty were of enteric fever, fifteen of scarlet fever, and six of diphtheria. Dr. Armstrong agrees with the conclusions presented by the Danish Government to the International Congress of Hygiene and Demography in 1891, that milk is a more frequent source of tuberculous infection than meat. Dr. Armstrong believes: 1. That it is important that all conditions relating to the production, storage, and distribution of milk should be under state control and regulation. 2. That every cow with tuberculosis (proved or reasonably suspected) on a dairy farm should be slaughtered and the owner compensated. 3. That all milk by the consumption of which there is risk of the spread of any infectious disease to human beings should be destroyed at once; and where no blame respecting such risk attaches to the owner, he should be compensated. 4. That the sanitary authorities of towns should have power to license and control the sale of milk sent into their districts from farms outside, and to prevent the sale of such milk, unless they are satisfied as to the sanitary conditions under which it is produced, stored, or distributed. 5. That in outbreaks of infectious disease associated with milk supply the sanitary authorities should have power to demand from the retailer the name and address of the producer of the milk. 6. That in outbreaks of infectious disease in any district, due to milk sent from another district, the sanitary authorities of the district in which the disease breaks out should have power, without delay, to inspect the dairy, and, if necessary, prohibit, by their officers, the sale of the milk. 7. That the sanitary authorities of rural districts from which milk is sent for sale into urban districts should be to some extent responsible to such urban districts for the sanitary condition of the dairy farms on which such milk is produced, and that they should inform such urban authorities of any infectious disease or other condition at such dairy farms whereby the wholesomeness of the milk is likely to be affected injuriously. 8. That rural sanitary authorities should be required to provide hospital accommodation for the isolation of cases of infectious disease occurring among dairy operatives.

Sweaters' Shops in New York.—The factory and anti-sweating laws of this State provide that no child under the age of fourteen shall be employed in any manufacturing establishment; that no rooms in any tenement or dwelling-house are to be used for the manufacture of clothing or artificial flowers, except by the immediate members of the family living therein; that no one is to employ any one to work in tenements or dwelling-houses without first obtaining a written permit from the factory inspector, which permit may be revoked whenever the health of the neighborhood requires it; and that every room must have not less than two hundred and fifty cubic feet of air space for every person working there during the day and four hundred cubic feet for every person working there at night. Recently the public press has called attention to the prosecution in this city by the factory inspectors of two firms for employing young children; of a sweater for having his bedroom and kitchen crowded with workers; of two others who had sixteen men and women working eleven hours a day in two small rooms in which the air was fœtid from crowding and the dirt could not be swept out; of another sweater who had eleven men and women crowded into one room; and of another who had seventeen men and women in three rooms. Most of these sweaters defied the authority of the inspectors, stating that they would fight the matter in the courts. We are glad to state that some of them have been fined and that the cases of the others are pending trial.

It is almost unnecessary to call attention to the danger to the health of the working people so confined. And the risk to the purchaser of ready-made clothing is not little. Canon Kingsley awakened England's attention to the danger to public health from these sweaters' shops in his sociological novel *Alton Locke*, and it is to be hoped that the vigilance of our factory inspectors will break up these disease-breeding foci among us.

The Survival of the Unfit.—In the *Popular Science Monthly* for June Dr. H. D. Chapin has published an interesting paper in which he reviews the statistics of the defective class in this country. He calls attention to the fact that, while the total population of the country increased but thirty per cent. during the decade 1871–'80, the defective class increased one hundred and fifty-five per cent. During the decade 1880–1890, the percentage of insane in public and private institutions had increased more than seventy-three per cent. During the same period there was a slight decrease in the number of paupers in almshouses, nearly three fifths of the paupers being foreigners. The number of convicts in penitentiaries increased during the decade more than twenty-seven per cent., while the general population increased only twenty-five per cent. The number of inmates of juvenile reformatories increased more than twenty-nine per cent. The author considers that weak character and environment bring out the unfittest elements, and that society by its treatment hastens to provide for their survival. He urges that our energies be devoted to combating the conditions that produce this class, and that the representatives of it in existence should be permanently isolated from the rest of society, as they are in Ohio, where conviction for a third criminal offense may entail a life sentence. This is not done to punish the offenders, but to permanently quarantine all "cranks, tramps, and generally worthless beings." Social sanitation should simulate the principles of maritime sanitation: first prevention, then isolation.

The Report of the Chamber of Commerce's Advisory Committee.—Shortly after the appearance of the cholera-infected vessels at this port, the Chamber of Commerce appointed a special committee on quarantine, consisting of Dr. Stephen Smith, Dr. A. Jacobi, Dr. E. G. Janeway, Dr. T. Mitchell Prudden, Dr. R. H. Derby, Dr. Hermann Biggs, and Dr. Allan McLane Hamilton. These gentlemen gave a great deal of time to the inspection of the quarantine at this port and to the study of the various questions relating to its administration; and, in order to disarm the criticism that none of them had any practical experience in the administration of quarantine, Surgeon-General Wyman, of the Marine-Hospital Service, Lieutenant-Colonel G. M. Sternberg, of the medical corps of the army, Dr. E. O. Shakespeare, of Philadelphia, and Health Officer W. T. Jenkins, of New York, were invited to share in the consideration of the questions at issue. Surgeon-General Wyman was represented by Passed Assistant Surgeon J. J. Kinyoun, who is well acquainted with modern quarantine administration.

The committee adopted the conclusion of the International Sanitary Conference at Rome, in 1885—that disinfection of the mails and merchandise was unnecessary; though they made the amendment that in case the merchandise had been prepared for shipment or shipped at an infected port, such exterior disinfection of the package as would not injure the contained goods should be practiced. This is advised because there is the possibility of exterior soiling of the package, or of a mail-sack, with infectious material.

Rags should be boiled or exposed to live steam, and edibles prepared or packed in infected places should be refused entry altogether. Sugar, it is thought, may be rendered safe by specially planned methods of disinfection.

Passengers on an infected ship should be removed at once on arriving in port, as their detention a moment longer than necessary is unjustifiable, isolated in groups as small as practicable, and held under observation for a period no longer than five days, in case no cholera occurs among them. The personal clothing and baggage of cabin passengers should be disinfected or not, as the Health Officer decides, but that of the steerage passengers should be thoroughly disinfected. The detention of passengers should be planned and maintained in accordance with modern views of quarantine that render possible the speedy release of the isolated groups in which, during detention, no outbreak of cholera has occurred. The committee is convinced that it is possible, under favorable conditions, by the employment of vigorous means of local disinfection on the ships, combined with the immediate removal of the dead and fresh victims of the cholera, and of those immediately associated with them, to separate places, largely to control and even ultimately to stamp out the disease without the removal of the passengers from an infected ship. But this usually, if not invariably, involves the sacrifice of human life, extreme and prolonged mental and physical suffering on the part of the passengers, and such an unnecessary detention of the infected ships as is seriously detrimental to the pecuniary interests of her owners. This disinfection can not with certainty be accomplished while the passengers are on board, and it can not be accomplished without the use of modern methods and modern appliances for this purpose, under the direction of persons acquainted with their use.

We do not believe the amendment to the conclusion of the sanitary conference at Rome is useful, as that body adopted the conclusion unanimously, there being no well-authenticated instance of merchandise, excepting rags, serving as fomites. And the recommendation regarding edibles does not seem useful, as the processes of manufacture would destroy the cholera germ, and in the case of sugar it is refined in this country, and the refining process would destroy the germ.

If the committee was convinced that vigorous means of local disinfection on ships and removal of cholera victims would control and ultimately stamp out the disease without the removal of passengers—and there are authentic records of this being done—why is it not possible to do this thing in the beginning, so that the only cases subsequent to the first will be those of persons already infected when the disinfection process is begun? This has been done and can be done, and there is no quarantine establishment in any port in the world in which the commerce is as large as at New York that is arranged on so extensive a plan that it would be feasible to isolate the passengers in groups as recommended.

A feasible plan with an infected vessel is to remove all passengers at once, disinfect them and their baggage, disinfect the ship during their absence, isolate any sick, and return the well to their disinfected vessel, subjecting them to several inspections a day. The entire procedure, with a large vessel, could be accomplished within twelve hours where a suitable quarantine plant existed, and there would be no necessity of creating a possible new focus for the disease in a quarantine camp.

Miscellany.

Symphysiotomy.—At a meeting of the Philadelphia County Medical Society held on October 12th, Dr. Barton Cooke Hirst read a paper on this subject, in which he said: Symphysiotomy has as remarkable a history as any procedure in surgery. Suggested for the first time in the *Surgery* published by Pineau in 1598, and first performed upon a living woman in 1777, the idea may be said to be three hundred years old, while its practical application dates back more than a century.* From the year of the first operation until 1858 symphysiotomy was performed eighty-five times in different parts of the continent of Europe and once in England with a mortality of thirty-three per cent. The frequency of the operation diminished after the first few years, until in 1858 it had practically died out. It was revived, however, in Italy in 1866, and in the succeeding twenty years seventy operations were performed with a mortality of twenty-four per cent. Italy continued to be the exclusive field of the operation until a year ago, when it was again tried in Paris by Pinard, whose interest in it was aroused by a visit of Spinelli from Italy. Ten operations have since been performed in Paris, two in Dresden, and one in Strassburg. From January 1, 1886, there have been fifty-two operations with only a single death, due to septic infection before the operation was undertaken. Twenty-three symphysiotomies have been done already this year, and the last thirty-four women have all recovered.

We owe the introduction of symphysiotomy into this country to Dr. Robert P. Harris, who, as is well known, has long been interested in the subject, and at the recent meeting of the American Gynæcological Society in Brooklyn read a paper tracing the development of the operation, showing by the most laboriously collected statistics the present brilliant results achieved by it, and demonstrating, by the description of typical cases, its utility in labors otherwise insuperably obstructed by a contracted pelvis.

Ten days after Dr. Harris's paper was read, on September 30th, the first operation in this country was performed by Dr. Charles Jewett, in Brooklyn. Three days later it was again performed at the Maternity Pavilion of the University Hospital in this city [Philadelphia].

The position of symphysiotomy is now established beyond a doubt. Its modern revival I believe to be the most important advance in obstetric surgery since the general adoption of abdominal section for the treatment of early extra-uterine pregnancy. It is applicable in contracted pelves with a conjugate over 67 mm., and therefore should be the method employed in almost all the cases of the kind in this country, for a greater contraction of the pelvis is rarely seen among us. It should, moreover, almost entirely displace the Cæsarean section for a relative indication. It is a much simpler and easier and a safer operation. This is also the opinion of Leopold, who can not be accused of prejudice against Cæsarean section, with his brilliant record in that field.

There is and will be for some time, perhaps, an objection to the operation from those who have no experience with it, on the ground that sufficient space can not be thus gained. In answer to this objection is the fact that the pubic bones may gape 7 ctm. after their separation, and the statement of Morisani that the conjugate is thereby increased from 1·3 to 1·5 ctm.

[Dr. Hirst then gave brief histories of six cases of symphysiotomy, including Dr. Jewett's and his own, and proceeded as follows:]

The technique of symphysiotomy is simple and easy. After thoroughly cleansing the field of operation and disinfecting the vagina as well, a short vertical incision is made on the abdominal wall, reaching to about three quarters of an inch above the symphysis. The attachments of the recti muscles are severed just sufficiently to admit one finger. The forefinger of the left hand is passed under the symphysis, and upon this as a guide the curved knife of Galbiati is inserted until its beak projects under and in front of the symphysis. The joint is then cut upward and outward. To avoid injury to the urethra, a metal catheter is inserted and pressed by an assistant downward and a little to the right, while the knife is placed a little to the left; but with Galbiati's knife I should think that there was little likelihood of cutting the urethra or the plexus of veins in its neighborhood. I at first thought that an ordinary probe-pointed, curved bistoury would serve my purpose well enough, but I quickly laid it aside, and was glad to avail myself of Galbiati's knife, which I happened to possess—at the time one of the three, I believe, in the country.

As soon as the joint has been severed, the wound should be covered with iodoform gauze, and then the child extracted with forceps, or allowed to be expelled naturally, as seems best in the individual case. I should, I think, almost always prefer the forceps. It is well to have the trochanters supported by assistants during the passage of the child through the pelvis, so that the sacro-iliac joints shall not be injured.

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* R. P. Harris, *Amer. Syst. of Obstet.*, vol. ii.

As soon as the delivery is completed the wound is sewed up, the lowest stitch, if desired, passing through the top of the symphysis. How the whole symphysis can be stitched up, as Leopold professes to have done, I do not understand. After closing the wound and dressing it, rubber adhesive strips are placed around the hips and the lower abdomen, and a tight binder is applied. The symphysis unites surprisingly soon, and three weeks after the operation the patient can walk as firmly and as well as ever.

There is only one disturbing thought in connection with the introduction into this country of an operation destined to do so much good. The charge of superficiality lies with some justice against us. We are too ready to reach out toward the top without a sufficient basis of solid preparation, and I fear that symphysiotomy may be undertaken by many who can not correctly measure a pelvis and who have not the experience to decide whether a head can pass through the pevis into which it is about to enter or in which it is engaged. There is consolation, however, in the reflection that, if symphysiotomy should be done needlessly, the results are not likely to be so disastrous as in the case of Cæsarean section, which, to my knowledge, was done several times unnecessarily during the excitement produced among medical men by the improved results of the Sänger operation.

Foreign Bodies in the Cornea.—At the same meeting Dr. Edward Jackson read the following paper:

The history given by the patient as to a foreign body in the cornea is often worthless. If the foreign body is but partlly imbedded, and the projecting portion hard and angular, so that every movement of the lid causes a scratching of the conjunctiva lining it, the patient, of course, immediately notices its presence, and can give a correct and definite history of its occurrence. But if the foreign body is deeply imbedded so that it does not touch the conjunctiva of the lid, or if it lies with a perfectly smooth surface presenting to the lid, its entrance may not be noticed, or the momentary disturbance caused by it may be so slight as to be forgotten before the secondary effects of its presence draw attention to the eye, and even if those secondary effects are ascribed to it, and the foreign body itself is perceived, it may be supposed to have entered the eye at a time considerably later than was the case. Often, however, the patient will, on account of the gradual advent of the symptoms of irritation, ascribe them to an entirely different cause.

Again, very many patients come with the impression that a foreign body is in the eye, from the irritation—the sensation of scratching—caused by a simple conjunctivitis. And these, having thought the matter over carefully and repeatedly, can usually tell just when and how the mythical foreign body was lodged there. And they even go so far as to accurately locate it by picking out some spot on the iris not before noticed, and regarding it as the offending object.

For the diagnosis of a foreign body in the cornea we must depend on, what generally is the sufficient basis for a diagnosis in diseases of the eye, the results of our examination of the patient. If the foreign body is comparatively large, the most casual glance may reveal its presence, but often there is need for special methods and a prolonged search before its presence or absence is established; and even where its presence is perfectly obvious at the first glance, these same methods must often be employed to make sure that we have completed its removal.

In the search for the foreign body the important idea with reference to the illumination of the eye is that it shall be thoroughly under the control of the surgeon, so that he may either strongly illuminate the cornea itself and view it against a dark background of unilluminated iris and pupil, or can illuminate the background, leaving the cornea in comparative darkness, and depending on the interruption of the light from the background, which any opaque foreign body will cause, to reveal its location. This is the advantage that the so-called "oblique" or "focal" illumination in the dark room possesses over inspection by an ordinary diffused light.

The shifting of the point of view so as to bring the foreign body into the area of most favorable illumination is essential to any thorough search, whatever method is employed. By focal illumination foreign bodies of light color will be best seen when strongly illuminated against the black pupil as a background; while if the foreign body is dark it is better to strongly illuminate the iris behind it.

We may also get an illuminated background against which a foreign body will usually appear as a black speck by throwing the light into the eye with the ophthalmoscope mirror held several inches in front of it, and shifting the position of the eye or the point from which it is viewed so as to obtain the fundus reflex through the different parts of the cornea.

An excellent method of searching for the foreign body, and one that has the advantage of being available during its removal, is to look for the interruption that it causes in the reflex obtained from the corneal surface. To do this, place the patient facing a window with a large open sky space, while the surgeon takes his position so as to obtain the reflection of the sky space from the surface of the cornea, a very good position being to stand behind the patient, looking down on the cornea. The patient's eye is then turned from point to point, so that the reflection is obtained from all parts of the cornea in succession. If the window with clear sky space is not obtainable, a piece of plain white paper or card-board strongly illuminated, and held close in front of the eye to be examined, will furnish the required reflex from the corneal surface. The essentials are that the reflex shall be bright, uniform, and large enough to enable the observer to go rapidly over the whole cornea without missing any part of it.

If on any part of the surface there is an irregularity, such as an ulcer or a foreign body, this will cause an interruption of the reflex, and be immediately noticeable. A great help in making such irregularities prominent is the careful drying of the cornea with a little absorbent cotton, a method to the full value of which my attention was called by our fellow member, Dr. M. W. Zimmerman. The removal of all moisture does not impair the reflex from the sound cornea, but lays bare any irregularity or loss of substance, which, when filled with fluid, would give almost the normal corneal reflex.

Another aid to the detection of foreign bodies in the cornea is the use of a solution of fluorescin. A good solution consists of—

Fluorescin	gr. j;
Sodium carbonate	gr. ij;
Distilled water	f ℥ j.

A single drop of this is placed on the suspected cornea, and after two or three minutes the excess is allowed to be washed away by the tears. It is then found that while on the uninjured cornea not the slightest effect has been produced, the corneal tissue in the neighborhood of any recent abrasion has been stained a noticeable light green. This discoloration at once directs attention to the locality of the injury, and the stained tissue furnishes a background against which any foreign body of dark color is more readily seen.

While the reception of a foreign body in the cornea may not be noticed, and during the first few hours the pain and redness resulting from its presence are apt to be quite slight, its continued presence provokes a reaction which increases in severity until it is got rid of. At first the redness will be confined to the vessels of the part of the circumcorneal zone nearest the foreign body, and its location will then often guide us to the site of lodgment. Later it extends until the whole conjunctiva and the deeper tissues of the globe become hyperæmic, when it becomes of little diagnostic value. With the increased vascularity come increased pain and tenderness.

Self-cure, in the case of a foreign body in the cornea, takes place by suppuration of the adjoining tissue to such an extent that the softening loosens the foreign body and allows it to be rubbed off by the movements of the lids—a slow, painful process, that probably few persons are stolid enough to submit to without seeking competent aid for its removal. In a few cases, however, the inflammation subsides, the foreign body becoming surrounded with fibrous tissue that tolerates its presence, and in rare cases it is possible for a foreign body to remain in the cornea a long time without provoking any reaction. I have met with three cases in which foreign bodies were thus retained for periods varying from one to eighteen months.

Of the removal of foreign bodies from the cornea in general, little need be said. The introduction of cocaine as a local anæsthetic has enormously simplified it. There is, perhaps, some danger now of being led by the passive demeanor of the patient to indulge in unnecessary manipulation of the parts. The thorough cleansing of the actual cavity of lodgment, together with the scraping away of the bruised and lacerated tissue, is very important, but the promiscuous scraping of the neighboring surface in the attempt to catch a foreign body that is not clearly seen is always harmful, if not dangerous.

When the foreign body enters with such force as almost to penetrate the cornea, and, to a still greater extent, when it projects into the anterior chamber, its removal becomes an operation of considerable delicacy and importance, on account of the danger of the premature escape of the aqueous humor and the scratching or puncture of the anterior capsule of the lens, causing traumatic cataract.

There applied a few months since, at the Wills Eye Hospital, a young man who had received a small chip of iron in the center of the left cornea the day before. Efforts had been made to extract it with a piece of magnetized steel and with a penknife, but had been unsuccessful; whether they had driven the fragment deeper I do not know. He applied in the morning, and Dr. Pontius, the resident surgeon, finding that the aqueous was escaping and the anterior chamber shallow, had, wisely, simply instilled atropine and closed the eye with a light bandage to secure rest. When the patient returned in the afternoon the swelling of the adjoining cornea had stopped the leakage of the aqueous, and the anterior chamber was of normal depth. The chip of iron was seen projecting from the posterior surface of the cornea into the anterior chamber.

The eye was placed under the full anæsthetic action of cocaine, and a broad, gradually tapering needle introduced at a little distance from the wound, in such a manner that its point entered the anterior chamber close to the foreign body and passed back of it. This point was held against the posterior surface of the cornea, the needle being steadily pressed forward sufficiently to keep the incision full and prevent the escape of aqueous. The foreign body was then dug out with another needle and the ordinary corneal spud. This was attended with the escape of some aqueous, but, with the broad needle held flat to shield it, any injury of the lens was prevented.

In such an operation the placing and steadily maintaining in proper position of the broad needle that acts as a shield is the most difficult part. For this purpose a needle which continues to broaden and becomes blunt and rounded on its edges, so that it ceases to act as a knife and more perfectly performs its function as a plug, might be a slightly better instrument than the ordinary broad needle. In this case the steady maintenance of the shield-needle in position was materially aided by causing the point to re-enter the posterior surface of the cornea, and by introducing it in such a direction that the tendency of the patient to move the globe kept it pressed against the needle rather than withdrew it.

When a foreign body composed of or containing iron remains a few days in the cornea it is apt to leave a dark-brown ring of staining when it is removed. It is often difficult to decide whether the appearance is due to this stain alone or whether some portion of the foreign body also remains. On this account it is more satisfactory to remove the stain if this can readily be done, but any prolonged or extended scraping is not justified, for the stain is harmless and temporary.

The electro-magnet is of little use in removing foreign bodies from the cornea, because they are so firmly wedged that its force is entirely insufficient to dislodge them. There is, however, a special form of foreign body for which I have resorted to the electro-cautery—namely, grains of gunpowder which have proved, when the attempt was made to extract them in the method of ordinary foreign bodies, to be so intimately associated with the adjoining corneal tissue as to render it impracticable to extract them in the ordinary way without too much laceration of tissue.

New Uses for Sulphonal.—Apart from its use in simple insomnia and some of the neuroses, sulphonal appears to have been of value in controlling such symptoms as reflex spasm and the uneasiness following injury. We note that Dr. Edmund Andrews, of Chicago (*Medical Record*, July 2d), speaks of sulphonal as a certain remedy in the treatment of muscular cramps of the legs appearing during the night, and especially those accompanying fractures of the long bones. In a case of recently fractured femur fifteen-grain doses gave immediate relief. In the after-treatment of laparotomy Dr. A. F. Jonas (*Omaha Clinic*, August) says that the symptoms of sleeplessness occurring in these cases should always be relieved, lest insomnia seriously interfere with recovery. He usually gives sulphonal in such conditions. Dr. Althous (*Am. Jour. of the Med. Sci.*) recommends sulphonal for the insomnia that is apt to occur in the treatment of psychoses following influenza.

Euphorin and Europhen.—"An unfortunate similarity," says the *Druggists' Circular and Chemical Gazette*, "exists in the names of two quite dissimilar products, euphorin and europhen. Euphorin is phenylethylic urethane, carbonate of ethyl and phenyl, a white powder of slight aromatic odor and taste; soluble in alcohol, slightly so in water; antipyretic, anodyne, and antiseptic; dose, 7½ to 15 grains. Europhen, or iododiisobutylorthocresol, said to contain 21·8 per cent. of iodine, is a yellow powder, soluble in alcohol, ether, chloroform, and oils; insoluble in water; antisyphilitic; dose, ¼ to 1½ grain. It will be seen that confounding one of these substances with the other might lead to most serious consequences. Mistaking the former for the latter would perhaps be bad enough, but a reversal of the case might prove fatal."

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

THE NEW YORK MEDICAL JOURNAL, NOVEMBER 12, 1892.

Original Communications.

TWO CASES OF LARYNGECTOMY FOR ADENO-CARCINOMA OF THE LARYNX.*

BY J. SOLIS-COHEN, M. D.,
PHILADELPHIA.

SINCE our last meeting I have performed laryngectomy in two cases of adeno-carcinoma of the larynx.

One operation was a unilateral exsection of the soft tissues with an anterior strip only of the thyreoid cartilage, in accordance with the modified laryngectomy which I described and recommended at one of our previous sessions.

The patient died of inspiratory pneumonitis within forty-eight hours.

The other operation was a complete laryngectomy with preservation of the greater portion of the epiglottis. The patient had an uninterrupted recovery.

CASE I. *Intrinsic Adeno-carcinoma of the Left Half of the Larynx; Tracheotomy immediately followed by Unilateral Modified Laryngectomy, both under Anæsthesia by Ether; Death within Forty-eight Hours from Inspiratory Pneumonitis.*—Mr. ——, aged fifty-four years, a merchant, had been successfully treated by Dr. L. Weber, of New York, for subacute catarrhal gastritis. On his return from a European trip, some six months after he first came under Dr. Weber's care, Dr. Weber noticed that he was unusually pale despite other objective and subjective indications of good health, and that his voice was hoarse. Dr. Gleitsmann was asked to examine the larynx, and he detected a laryngeal growth. Four weeks' treatment with potassium iodide having produced no impression upon this growth, two considerable fragments were removed by Dr. Gleitsmann and were submitted for microscopic examination to the Drs. Heitzmann, who pronounced the growth a malignant adeno-carcinoma. Nine days after removal, as I subsequently learned from Dr. Gleitsmann, proliferation had taken place, although the neoplasm had only slightly grown since he had first seen it. About this time, November 7, 1891, I was consulted, counseled a unilateral modified laryngectomy, and, after some correspondence with Dr. Weber and Dr. Gleitsmann, was placed in charge of the case. At this time the left side of the larynx was in part the site of two whitish sessile growths, the upper one upon the ventricular band and the lower one projecting from the ventricle. Except for the pallor, the general health seemed excellent, but there was some bronchitis and the heart was weak, probably the result of overexertion as an athlete in the patient's younger days.

After a few days' preliminary antiseptic treatment of mouth and throat, I performed the operation on November 14th, with the assistance of Dr. Edward Martin and Dr. A. W. Watson, of Philadelphia, and Dr. Gleitsmann, of New York. After consultation with Dr. Gleitsmann it was decided that the condition of the heart required the preference for ether as the anæsthetic instead of chloroform. The ether answered charmingly, without the slightest evidence of nausea during its administration or afterward. Tracheotomy was performed first, and a very large tube was inserted, through which the anæsthetic was administered during the succeeding steps of the main operation. The head was kept at a lower level than the thorax so as to favor drainage of the blood from the direction of the trachea. A vertical incision being made so as to expose the anterior portion of the larynx, the thyreoid cartilage was severed in the middle line, the wings were held asunder with blunt hooks, and a globular gauze tampon, completely covered with rubber dam and secured with a long thread, was packed down upon the cannula in the trachea. Then a second section of the left wing was made with strong cutting forceps about an eighth of an inch from the middle line, or just far enough to include that portion of the thyreoid cartilage which receives the insertions of the vocal bands. The soft walls of the left side of the larynx were then stripped from the main portion of the wing of the thyreoid cartilage, and the left half of the larynx was cut away with curved snipping scissors close to the cricoid cartilage. On account of the contracted space, I found this unilateral operation far more difficult and tedious than an operation involving both sides of the larynx, but, with the aid of Voltolini's electric search light for the nose and mouth, the parts were kept well illuminated and the exsection was thereby much facilitated. On looking into the wound while I was examining the specimen, Dr. Gleitsmann remarked that the vocal band did not appear to have been taken away. I had the vocal band in my hand, however, and, on examination, detected that the apparent vocal band in the wound was due to curling inward of the divided elastic crico-thyreoid membrane which is anatomically a continuous structure with the vocal band. This condition therefore favored phonation in the future history of the case, and may be purposely produced in subsequent cases to replace an exsected vocal band. The wound in the larynx and in the corresponding portion of the pharynx was now thoroughly packed with iodoform gauze and the parts were lightly approximated. The patient was placed in bed with a temperature of 98°, a pulse of 100, and a respiration of 32. One hour had been consumed in the two operations and the dressings. The patient did well all night and for the first twenty-four hours, his pulse remaining at about 90 and his respiration being normal, though his temperature had reached 100°. He was nourished with enemata. There was one feature about the case which I did not like, and that was an entire absence of cough. This is a bad sign after tracheotomy for croup. I thought at the time that the lack of cough was probably due to the dressings in the larynx, but subsequent experience does not favor this opinion. The patient complained a good deal of an almost continuous disposition to swallow, excited by the dressing in the pharynx, and which he could control only with difficulty. During the second night his temperature rose to 103°, the pulse being 100 and the respirations remaining at 20 to the minute. We removed the dressing and withdrew the tampon. The tampon was so firmly wedged that it had to be grasped with forceps, lest the tug with the string should break it off. As it was drawn out with a jerk, there was a gush of foul-smelling sanguineous mucus to the amount of a teaspoonful expelled though the cannula as by suction. The long cannula was removed and an ordinary one substituted. The night was passed comfortably—more comfortably, I was told, than the first night. At my morning visit next day, 7 A. M., I noted a marked change. Pulse 120 and weak, respiration 40, temperature 106° in the rectum. Pneumonitis had developed. It was distinctly embolic and occupied the lower portion of the right lung. The dressings were removed. Everything looked right and dry about the wounds, so that the tracheotomy tube was removed to lessen any source of irritation from its presence. The patient was raised and given boric-acid water to swallow as a trial. This being successful, several teaspoonfuls of whisky and water were swallowed without much trouble, and without any going astray, though the last swallow or two produced pain, probably in the sore epiglottis. The patient was laid down and a soft stomach tube was passed down the œsophagus, its entrance being facilitated by voluntary glutition. Several ounces more of stimulus were administered through the tube. This stimulation was repeated in three hours. The patient remained without much change for three or four hours, during which his respirations sank to 30 and his temperature to 104°, but his heart became feebler and feebler despite temporary stimulation from time to time with hypodermic injections of strychnine sulphate. His nutrient enemata were all retained and there was not at any time any complaint of hunger or of dyspnœa. Toward one o'clock slight delirium suddenly developed and the patient gradually sank by asthenia. There was no post-mortem. Pneumonia of influenza was very prevalent at the time. Sepsis was very prompt and toxic in this case, for I have rarely seen a case of simple tracheotomy with less access of blood into the air passages. The specimen removed was examined histologically by Dr. Walter J. Freeman, of the Philadelphia Polyclinic, who reported it an undoubted adeno-carcinoma involving the whole thickness of the ventricular band, and appearing to have sprung from its underside and from the ventricle itself, but without having encroached upon the tissue of the vocal band, which appeared normal.

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* Read before the American Laryngological Association at its fourteenth annual congress.

Case II. *Adeno-carcinoma of the Larynx at the Site of a Papilloma removed Sixteen Years previously; Laryngectomy with Preservation of the Epiglottis; no Dressing in the Pharynx; Nourishment by Enemata; Recovery.*—X., a teamster, became hoarse when twenty-five years of age. Dyspnœa soon followed, and increased during three years to such an extent that breathing had become very difficult. He consulted Dr. Lefferts, of New York, who detected an extensive papilloma on the left side of the larynx. Dr. Lefferts removed this growth piecemeal with forceps in September, 1876, and published the case (Case II), with a series of others, in the *Medical Record* of New York, February 9, 1878. Relief was complete and continuous for ten years or more. Then subjective recurrence took place, and treatments of different kinds undergone in various hospitals. During 1891 the patient had gotten much worse, and a fungous growth had protruded externally. In this condition the patient applied for relief at my clinic in January, 1892. He had considerable pain, considerable dysphagia, great dyspnœa, and frequent cough, with considerable difficulty in respiration. Laryngoscopic inspection revealed two masses of myrtiform morbid growth superimposed upon the left side of the interior of the larynx, sessile and quite white. A sanious mass of similar growth protruded externally through and above the crico-thyreoid membrane. On writing to Dr. Lefferts, he gave me the reference to the report of the case. The growth was a papilloma at the time he operated. I was struck with the fact that the growth I saw was almost a reproduction of the picture in Dr. Lefferts's paper, but the growths were white and had not any characteristic papillomatous appearance.

The history of the case indicated a recurrent papilloma, and I determined to perform tracheotomy and remove the masses laryngoscopically. I happened to fall ill with influenza at this date, and my colleague, Professor Forbes, kindly performed the tracheotomy for me at one of his own surgical clinics. Subsequently I removed several fragments endolaryngeally. They were pronounced to be sarcoma. I then exsected the diseased skin and the morbid growth from the exterior of the larynx, split the larynx, and removed with forceps, scissors, and sharp spoon all of the morbid mass that could be recognized as neoplastic. Everything went admirably for four weeks, when recurrence took place and the growth soon became as large as before the operation, and began to extend to the right side of the larynx anteriorly. It again protruded externally between the wings of the thyreoid cartilage.

Laryngectomy was evidently the sole resource, and, after waiting as long as I deemed it prudent, I performed this operation before my class in Jefferson Medical College, assisted by Professor Keen and by Dr. O. Horwitz, the chief of the surgical clinic. The parts had become so much altered by the previous operations that I found it impracticable to tie the laryngeal arteries before extirpating the larynx, and had to trust to my assistants to seize and secure the bleeding vessels as they were severed. The incision was made everywhere through healthy structure. The diseased skin and inclosed morbid mass was circumscribed by elliptic incisions in sound skin joining a vertical incision from the hyoid bone above and region of the tracheal cannula below; and then a transverse incision was made at the level of the hyoid bone so as to make a T-incision and two lateral flaps. The incision was carried down to the periosteum, and the soft parts were then separated with Allis's dry dissector, which answered admirably. During this time anæsthesia was carried on by chloroform through the tube by means of a funnel and an India-rubber tube. When the larynx had been separated from the soft tissues and I could get my fingers around it, I removed the ordinary cannula and inserted a tampon cannula to prevent as much as possible any entrance of blood into the air passages. For this purpose I used the von Trendelenburg cannula, but not the Trendelenburg system. Trendelenburg uses a rubber bag inflated with air. Air or water bags are very often opened by puncture during these operations. An hour or two before the operation I had moistened a piece of ordinary surgical sponge and secured it around the cannula, and over this I tied a bulbous India-rubber tube. The patient's head was lowered as soon as this cannula was introduced, and anæsthesia was subsequently kept up through the tampon cannula, which leaked a little despite all efforts to prevent it. The epiglottis being healthy, I made an incision through the hyo-epiglottic membrane and cut the epiglottis square off. The larynx was then tilted forward.

Knowing that there had been difficulty in nourishing patients after operations, I had determined to save the entire œsophagus if possible, instead of severing it at the level of the cricoid cartilage; and by careful manipulation I was able to strip the mucous membrane and the œsophagus from the tips of the arytænoid cartilages down to the base of the first ring of the trachea without perforating the œsophagus. The larynx, with the first ring of the trachea attached to it, was then severed from the trachea, and the trachea was stitched to the skin in two flaps formed by the sides of the original tracheotomy incision which had embraced the second and third rings. The tampon cannula was then stitched to the integument to insure its resistance to expulsion in coughing. The soft parts were brought loosely together with sutures without any gauze or other dressing in the pharynx, and a soft-rubber stomach tube was inserted into the stomach through an opening left in the right-hand corner of the transverse incision. This was so placed under the impression that there might be necessity to use it for introducing nourishment; but it was found unnecessary, and it did some harm. An hour had been occupied in the whole procedure—anæsthetization, operation, and dressing. The patient was then put to bed, with the head much lower than the thorax, and this position was maintained for several days. He was carefully watched. I stayed with him for sixteen hours, and during this time I instructed a number of young men connected with the throat and surgical clinics of the hospital how to take charge of the case. Two members of these staffs were with him constantly for eighty hours. Twice during that time the man would have died had skilled hands not been present to remove mucus from the tracheal tube. The advantage of having the cannula stitched to the skin was well demonstrated upon these occasions. This patient had no trouble in coughing. It is to the close attention of these young men for the first eighty hours and to the admirable services of our chief surgical resident, Dr. Hager, that this man chiefly owes his life, for the attention after such an operation is far more important, from a clinical point of view, than the operation itself, all-important as that is.

There was a good deal of oozing alongside of the œsophageal tube. On the third night this tube became detached and we did not reintroduce it. On the fourth day the tampon cannula was removed and a simple one introduced. The tampon cannula was perfect, and for more than sixty days remained fit to use again, so far as flexibility and security are concerned. Nutritive enemata were used for four or five days, and then we gradually began to feed the patient by the mouth. At each attempt at swallowing, a piece of gauze was held tight above the tracheal wound and the parts pressed close together while the patient swallowed. There was a little trickling for a few days, but this ceased. It was interesting to watch the œsophagus during swallowing before the external wound contracted. It was easy to see that the œsophagus opened when the man took water. There has been some doubt whether there is a mechanical distention of the mouth of the œsophagus in glutition, or whether there is some dilatory action of the œsophagus itself. In this case the œsophagus certainly did open to receive water at least. The man has made an uninterrupted recovery. There has been no attempt made to use a voice tube, and for two reasons: In the first place, I know of no one in Philadelphia competent to make one; and, in the second place, I did not wish to put anything into the wound that would irritate it until there should remain no doubt in regard to the question of non-recurrence.*

From the history of this case, I took it for granted at first that it was a papilloma recurring upon the seat of a former growth; but when a portion of it was examined by a microscopist it was pronounced sarcoma.

After extirpation of the larynx the growth is pronounced to be a cylindrical epithelioma, or a destructive adenoma or adeno-carcinoma invading the arytænoid and thyreoid cartilages as well as the soft parts. As seen in the specimen, it nearly fills the cavity of the larynx, projecting from the left side mainly, but extending slightly to the right side, and penetrating necrotic portions of both wings of the thyreoid cartilage so as to present externally and involve the cutaneous surface likewise.

A point of interest in this case is the development of a malignant growth upon the site whence a papilloma had been extirpated many years previously. Certainly there was no immediate transformation in this instance, more than ten years having elapsed without recurrence of symptoms of morbid growth, and five or six years more having elapsed before the recognition of malignancy. It may be that the cicatricial tissue at the site of the initial growth was more prone to undergo malignant degeneration than the healthy mucous membrane, and thus led to development of the malignant neoplasm at that point in preference to another.

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* Five months after the operation there had been no recurrence.

A REPORT OF FIFTY CASES OF EXTRACTION OF CATARACT WITHOUT IRIDECTOMY.*

By OREN D. POMEROY, M. D.

These cases are reported in order to present some of the indications for and against the method of extraction without iridectomy. The results of the extractions are as follows:

Vision $\frac{20}{XV}$	3	Vision $\frac{20}{C}$	9
" $\frac{20}{XX}$	2	" $\frac{20}{CC}$	3
" $\frac{20}{XXX}$	7	" counting fingers	
" $\frac{20}{XL}$	14	at four feet	1
" $\frac{20}{L}$	4		—
" $\frac{20}{LXX}$	7		50

In three cases both eyes were operated on successfully. The visual results might have been better under certain circumstances. It appears that a pupillary membrane was operated on thirty-one times, leaving nine without operation. Most of these might have been further improved by an operation, but in some cases the patients lived at a distance and subsequent operations were inconvenient. Again, many were satisfied with the amount of sight obtained, and did not care for more operations. In thirteen cases, or about a third, astigmatism required to be corrected, and it is not improbable that other cases of astigmatism were overlooked. I have been astonished to see how much the vision in certain cases has been improved by a more careful correction of the refractive error. Moderate prolapse of the iris occurred in two cases with a somewhat peripheral pupil where operative interference seemed unnecessary. In two cases, both in young subjects for senile cataract, the lenses were swollen and encroached on the anterior chamber, making it difficult to pass the knife across, and the iris was wounded near the pupil, which caused the latter to be somewhat distorted, but the vision was good in each case. In another case the knife cut out a piece of iris, making a pupil something like that after an iridectomy; the healing was slow, but the ultimate result was good. Subsequently the appearance was the same as in iridectomy. In another case the iris became caught in the wound a day or two after the operation, and there was failure to properly close the wound. One or two applications of strong nitrate of silver sufficed to cause coaptation of the parts, and the case did well. There were three cases of prolapse of the iris occurring from one to three days after the operation and without assignable cause. Two of these were iridectomized at once with good result; the third was incised, cauterized, and iridectomized, with a result of vision $\frac{20}{CC}$. Another case resulted in kerato-iritis, with partial closure of the pupil and a small opacity on the cornea, dependent, evidently, on a too thorough replacement of the iris by the repositor. The vision, however, became good after an operation.

Two other cases showed the pupil drawn far toward the wound, but neither incarcerated nor prolapsed consequent on loss of vitreous. In the first case the lens was inadvertently extracted in its capsule. After it was nearly expelled the pressure was mostly removed from the cornea and considerable vitreous (one third to one quarter) escaped.

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* Read before the American Ophthalmological Society, July 20, 1892.

Immediately on the delivery of the lens I refused to manipulate the eye further than to lift the upper eyelid and observe the cornea deeply sunken into the globe, but in fair coaptation and with no prolapsus of the iris. This patient recovered without excessive reaction, but vitreous opacities were found. The vision was $\frac{20}{\mathrm{C}}$. I could not account for the loss of vitreous in this case and also in the subsequent one. The latter, which is recorded as a failure, showed nothing unusual in the extraction until after the expulsion of the lens, when the Bowman spoon was used in manipulating the cornea so as to more perfectly restore the dislocated iris, the wound suddenly widely gaped, and from one quarter to one third of the vitreous suddenly escaped. No speculum was used; the eye was looking to the front, there was absolutely no faulty conduct on the part of the patient, and I could not in the least account for the accident. No violent reaction occurred; the pupil was drawn far upward without prolapsus or incarceration, but there has been circumcorneal injection and some photophobia most of the time since the operation, and the eyeball shows diminished tension. At one time the vision was $\frac{20}{\mathrm{CC}}$, but three months afterward it is not more than counting fingers at four feet.

I can not but feel that extraction of cataract is sometimes an exciting cause of sympathetic ophthalmia. Some years since, I reported to this society several cases of sympathetic ophthalmia following extraction of cataract. In this list of fifty extractions I had one case of extraction in the right eye, with no unusual reaction, but which was followed in two months by exudative iritis, with diminished tension in the left eye. Some of my colleagues did not regard this as a case of sympathetic ophthalmia.

In another of these cases a perfect extraction was done with a high visual result, and no secondary operation. In two years the patient returned to the hospital with the fellow eye far advanced in phthisis from iridochorioiditis, with no explanation of the cause of the trouble, except the operation on the fellow eye. The eye was red and irritable, and enucleation was at once done.

In none of these cases was iridectomy done except in those of prolapsed iris occurring one or more days after the extraction.

Some Details of the Operation.—Latterly the bichloride of mercury (one to ten thousand) has been used, bathing the eye freely with it before the operation and using it with some freedom during the operation. The instruments are all immersed in boiling water. Cocaine has been used, in the strength of from two- to four-per-cent. solutions, instilled fifteen minutes before the operation for three or four times. The pupil should be about half dilated, as in this condition the knife is passed across the anterior chamber with less risk of wounding the iris, according to my experience. If, however, the patient is nervous or lacking in self-control, the only alternative is ether or chloroform.

For the last year I have rarely used the spring speculum, as I have seen vitreous extruded in consequence of its use It is not in the least difficult to do the section without it, in a majority of instances. The lower lid is cared for by the fixation forceps applied upon the lower portion of the eyeball very near to the cornea, while the upper lid is drawn up by the fingers of an assistant, or an elevator may be used, although it is not often necessary, and is less safe than the fingers. I have always used my right hand in operating, as I believe I do better with it than with the left. For the right eye the position is naturally at the head of the patient, and for the left the operator may stand on the right side, reaching across to the left eye. This is just as convenient in operating as in that of the right eye. A rather broad Graefe knife is always chosen, and in making the section an imaginary equilateral triangle is laid on the cornea with the base upward. The puncture and counterpuncture correspond to the two upper angles of the triangle. The knife enters about midway in the limbus, and emerges at a corresponding point on the opposite side; there is often a tendency to make the counter puncture too deeply.

The section terminates at the margin of the sclera above, as nearly a possible, although in some cases, by an effort to avoid the iris, the incision may extend too far in the clear cornea. The latter condition seems to favor anterior synechia.

A properly performed simple extraction does not ordinarily result in more than a very small amount of bleeding, and often none at all. In order to avoid the iris, the knife should be passed slowly and very deliberately across the anterior chamber, being careful not to tilt it so as to lose aqueous, and as soon as the point emerges at the counterpuncture a long and a quick thrust should be made, completing half or more of the section; by that time the knife has so far passed by the iris that the section may be completed with sufficient deliberation.

The capsule is lacerated with the Graefe fleam-shaped cystotome near the center of the lens, being careful to avoid the upper periphery for fear of lacerating the iris or rupturing the zonula. I prefer to deliver the lens by means of the Daviel or Bowman spoon, one being placed on the sclera above and the other on the lower portion of the cornea.

The spoon is preferable to the finger from the fact that the compressive force may be applied more exactly where required than when the too wide finger is used, especially if the pressure is used outside of the lid, as is generally the case. One great drawback to simple extraction is the difficulty of removing bits of lens matter after the iris has returned to its proper position. To avoid this, it is well to deliver the broken-up lens matter while the body of the lens is *in transitu*—that is, before the iris has been returned to its position—by a stroking movement of the spatula on the cornea, until the pupil appears black; this may be accomplished at about the time the body of the lens is extruded from the eye.

After thoroughly irrigating the eye with the bichloride solution I have latterly used eserine, in a solution of one grain to the ounce, although I do not feel certain of its value in preventing prolapsus of the iris; but, on the other hand, I have not been impressed with its tendency to induce iritis, as has been asserted by many. A piece of absorbent cotton dipped in the bichloride solution is then laid on the eye, and on this a sufficient piece of dry cotton, and the binocular bandage is applied. Quite recently, instead of this, the sterilized vaseline with the bichloride (1 to 5,000) has been used on the cotton placed next to the eye; this prevents the dressing from sticking to the part and enables the eye to be opened without violence. On the next day the dressing is removed, and, if there has been no untoward symptom, little or no discharge on the dressing and no unusual swelling of the lid, the dressing is reapplied without opening the eye. This process is repeated for the next three or four days, when the bandage is removed and a shade placed over both eyes. I am not, however, superstitious about opening the eye at any time, provided the symptoms call for active interference. The principal point seems to be to do nothing to interrupt the healing of the corneal wound, or to cause it to open after slight adhesions have taken place. Atropine is used after three or four days. In one case an early use of atropine apparently increased the intra-ocular pressure and forced open the wound and induced a prolapsus of iris. *The prolapsus of the iris is the great drawback to this operation.* In many instances the iris may be restored to position by external manipulation. If the anterior chamber is allowed to fill, the iris is much more likely to float back into position. Sometimes the iris is kept from returning by being pinched in the angles of the incision, and the manœuvre suggested by Knapp—of depressing the lower part of the cornea so as to make the wound gape—may overcome this difficulty. In a majority of instances, however, the repositor of Wecker is needed to restore the iris to position. I have observed frequently that if the pupil still remains with a little nick in it, pointing in the direction of the wound, after complete recovery we find the pupil of the same shape as at first. In one case great persistence was used in completely returning the iris, and a kerato-iritis resulted, leaving a small opacity of the cornea and a contracted and adherent pupil. The patient, however, recovered good vision after an operation.

The most insurmountable difficulty, however, results from prolapses occurring one or several days after the operation. These, in many instances, can not be satisfactorily accounted for. Swelling of lens matter and opening of the wound, or failure of the wound to close perfectly and retain the aqueous, or too early use of atropine, are more frequent causes of this accident. Any violence inflicted on the eye during recovery oftener causes prolapsus of the iris than is usually supposed, and where it is practicable it is well to tie the patient's hands so that by no possibility can mischief be inflicted by touching or rubbing the eye. Prout's wire apparatus over the dressing would seem justifiable. When prolapsus has occurred a day or more after the operation I am in the habit of doing iridectomy under ether, as cocaine is not sufficient to quiet the eye at this time. I have heard that others have occasionally pushed the iris back after a twenty-four-hour's prolapse, but this manifestly can not often be done. It may be needless to remark here that iridectomy under these circumstances must needs be an imperfect operation.

Incising or cauterization of the prolapsus has also been done on some of these cases with success.

I believe that, in order to obtain the highest visual result, almost every case requires, sooner or later, a secondary operation on a pupillary membrane without necessarily reflecting on the character of the previous operation. The two-needle operation has been done more frequently than others, the cutting or tearing needle being displaced in many instances by some form of knife-needle (Knapp's), on the theory that the latter may be used to incise the membrane as well as to tear an aperture as with the ordinary needle. The knife-needle is also used to split the capsule (Knapp) without the intervention of the stop-needle. In very diaphanous membranes the ordinary needle has been used to displace them by pushing the membrane as far to one side as possible, sometimes twisting the needle so as to entangle it more perfectly on the needle point (Agnew). The procedure, in very dense membranes, of drilling an aperture by means of the needle, as suggested by the late Mr. Critchet, has also been practiced. Agnew's hook operation, sometimes using the blunt hook when the membrane has been punctured, has also been done. Forceps, back-toothed and others, have also been used to draw out the membrane. The instrument possessing the highest degree of effectiveness in incising the membrane seems to have been the Graefe knife. Iridotomy has also been done with this instrument. Since antisepsis has been practiced it has seemed to the writer that the danger of secondary operations has been much diminished. Some of these cases have required three or four operations to clear the pupil. The operation has been done after three weeks, provided the eye was quiet, but in some cases it has been done to relieve the irritability of the eye where it seemed to depend on dragging of the iris on an adherent membrane.

The simple extraction gives a circular pupil, which, in the most favorable cases, yields more perfect visual results; but this advantage is often diminished by the fact that in many cases the pupil is drawn somewhat toward the corneal wound from a tendency of the iris to prolapse or become incarcerated in the wound, or to a possible wrinkling of the iris. The traumatism inflicted on the sphincter iridis in the delivery of the lens may also induce a partial paresis which might account for the displaced pupil. The greater likelihood of leaving lens matter behind in simple extraction is an undoubted objection to the operation.

There is probably less traumatism in this operation than where iridectomy is done, and a speedier recovery may reasonably be expected. My notes are not specific enough on this point to draw exact conclusions, but I have been impressed with the short duration of the healing process, some of these cases apparently having no reaction worthy of mention. I feel sure, in a general way, that repair in the better class of cases occurs more speedily than where iridectomy is done.

It might be supposed that there would be less *astigmatism* after simple extraction, but my cases show a considerable number where cylinders were needed.

The simple extraction is easier to do, as it is usually accompanied by little or no loss of blood and may be done with greater technical exactness, as the parts may be accurately inspected. Often, however, we have to confront a small-sized pupil which is not always as dilatable as could be desired. In an operation on the membrane there is less room in which to work than in a pupil after iridectomy, and consequently more embarrassment in the manipulation. In lacerating the capsule in simple extraction there is more danger of wounding the iris than in the older operation.

It is an undoubted fact that in the cases of prolapsus of the iris we are much worse off than had there been a previous iridectomy done.

Although I propose to continue doing the simple extraction, I can not assert that, on the whole, it is a great improvement on the older operation.

THE CHOICE BETWEEN EXTIRPATION AND COLOTOMY IN CANCER OF THE RECTUM.

By CHARLES B. KELSEY, M. D.,
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In selecting the proper treatment in any case of stricture of the rectum, the diagnosis between malignant and benign disease is of the first importance. Much temporizing may be resorted to in non-malignant stricture, but in cancer the surgeon is brought at once to the choice between extirpation and colotomy. One of these must be decided upon, and it is not necessary here to argue the point that as soon as the decision is reached it should be carried into effect. Nothing is ever gained, and many years of useful life may be lost, by postponing till a more convenient season an operation for cancer of the rectum, whether it be extirpation or colotomy. If colotomy is indicated at all, the time to perform it is immediately after it has been decided not to do excision, not after acute intestinal obstruction (a rare thing in cancer) has set in, or after the sufferer has reached the closing days of lingering disease.

The choice between extirpation and colotomy in any case of cancer may be easy or may be very difficult. In some cases extirpation is manifestly not to be thought of and immediate colotomy may be done. In others extirpation holds out so good a chance of prolonging life, and possibly even of effecting a radical cure, that it is plainly indicated. Between these two classes there is a large group of cases where the indications for treatment are not as plain as they should be.

The operation of extirpation of the rectum dates back to 1830, when it was advocated and practiced by Lisfranc. After a short period of popularity it was almost abandoned on account of its bad results. Within the last twenty years it has again become popular. Is history to repeat itself? Perhaps so in a measure, but, if so, we shall not have traveled in a circle. Sixty years ago it was extirpation or nothing. Now it is extirpation or colotomy.

The late Dr. Van Buren, about ten years ago, tried to lay down the rules which should guide us in selecting cases for excision. They were very simple. The growth must be distinctly circumscribed, movable on subjacent tissues, and within easy reach by an incision through the perinæum. Since his time Kraske has given us an entirely new operation. By an incision over the sacrum he proved the possibility of resecting portions of the rectum too high to be reached by an incision from the perinæum and too low to be reached by laparotomy. By a combination of Kraske's operation and the old one by perineal incision it has therefore become possible to either resect long pieces of the rectum or to amputate long portions which would have been inoperable according to Van Buren's rules, on account of their distance from the perinæum. The advance must not be overestimated. We can now amputate six inches of rectum instead of three, or we can resect a circular carcinoma at a point six inches from the anus, but to do any good we must still confine our operations, as Van Buren insisted, to cancer of the gut and not of the gut and surrounding tissues, and to a very early stage of cancer at that.

Now, even in these cases the question is, How much good do we do? Given an annular carcinoma of the rectal pouch suitable for operation according to the rule just enunciated. It is a brilliant piece of surgery to dissect it out, unite the divided ends of the gut above and below with sutures, and secure healing without even the complication of a fæcal fistula; but, by adopting this as a routine practice, does the surgeon, in any considerable number of cases taken together, lengthen or shorten life over and above what would result from colotomy in the same cases?

The surgeon at first attacks these cases hopefully. It seems as though so brilliant an operation as excision, when successfully performed, must be of some benefit. But very soon it begins to be apparent that the results are very unsatisfactory. A certain proportion of the cases die from the operation, and such a result is the more disheartening when he considers that if he had been content with colotomy the patient might have lived in comparative comfort for two, three, or even four years. But even in the patients who recover from the operation, when the operator finds a recurrent nodule in the cicatrix at the end of three or four months, he is apt to ask himself if the operation has paid.

There is no escaping the conclusion which a study of these cases makes evident, that cancer anywhere in the length of the alimentary tube is an exceedingly hopeless and intractable disease, tending almost inevitably to rapid recurrence, no matter how completely it may be removed.

At a meeting of the Royal Medical and Chirurgical Society about three years ago Kendal Franks reported the results of fifty-one collected cases of removal of cancer of the colon. One patient only in the fifty-one was cured for four years, and the direct mortality was forty per cent. In cancer of the rectum, if the cases are selected with care, the mortality will not be more than about twenty per cent.; but the cures for four years will be very, very few, and recurrence within a year will be the rule.

In trying to reach safe conclusions on this subject it is necessary to be very accurate. There are many cases in which extirpation should certainly not be performed, and there are some which just as certainly should not be subjected to colotomy, at least until after excision has been tried. The former are those of extensive disease involving not only the rectum but the adjacent tissues, and in this class I personally include many upon which others would operate. For my own part, I have about finished trying to dissect a cancerous rectum away from the base of the bladder when it would almost require a microscope to decide whether all of the disease had been removed or not, for in such cases I expect an immediate recurrence, and often before the incision has healed. I have also about finished removing the deep urethra, prostate, and seminal vesicles to make sure without a microscope that all of the cancer is removed, for in those cases I expect either death from the operation or immediate recurrence. The cases in which extirpation should be done are those of epithelioma low down in the rectum, and more especially those which begin at the anus and secondarily involve the rectum. These are the ones which are curable by excision, or, if not curable, those in which recurrence is longest delayed.

But between these there is a class of cases in which the rule for treatment is still, as I have said, to be determined. These are the cases of annular scirrhus of the rectal pouch, or even of the upper rectum, which are manifestly removable without more than the average risk. Given, say, twenty of these cases, which operation will give the greater length of life for the group, extirpation or colotomy? Unquestionably, I believe, colotomy.

In extirpation we do a capital surgical operation having a very high death-rate, and for what? For the hope of cure it is true, but we do not cure. In the cases which we lose we shorten life sometimes by years. In those which recur before cicatrization even is complete we often do the same. In those which recur after a few months the operation may be said to have prolonged life by just so long as elapses between the extirpation and the recurrence. In colotomy we do an operation with scarce any risk and with no hope of cure. But we invariably prolong life, and sometimes for several years, we relieve pain, we secure the greatest possible length of days next to a cure, and we lead the sufferer gently down to the grave. In the one case we aim high and fail, in the other we are satisfied with less and accomplish much more.

In arguing thus for colotomy in preference to excision in many, though not in all, cases, I am addressing myself to those who know what colotomy is, what it will do, and what are its results. To those not familiar with the results of the operation the argument may have some weight; but to those who say they believe that it inflicts a disgusting deformity worse than death itself it can have no force at all. Fortunately for the sufferers from cancer of the rectum, the latter class are rapidly becoming converted to a more intelligent view, and but few of them remain. Colotomy, especially inguinal colotomy, relieves pain, does away with the constant tenesmus and discharge from the rectum, which by their exhausting effects are the immediate cause of death, delays the development of the disease by preventing the straining and congestion of defecation, prevents absolutely the complication of intestinal obstruction, which is another cause of death, enables the patient to sleep, eat, and gain flesh, and often makes him think himself cured in spite of the plainest prognosis to the contrary. Instead of passing his days and nights upon the commode wearing out his life in the effort to free the bowel from its irritation, he has one or perhaps two solid fæcal evacuations from the groin in twenty-four hours. Is it pleasant to have the gut end in the left groin? No. But after a very few days the patient with cancer of the rectum, whose anus has been placed in the groin by the surgeon, will tell you that life, from having been a constant torment, has again become worth living.

I often wonder what these men who talk about colotomy as something inexpressibly disgusting imagine Bryant, Allingham, Cripps, myself, and others who practice the operation are doing with our patients. We might naturally be supposed to be anxious to relieve suffering and earn their gratitude, and after a few years of experience and a few hundred trials we might be supposed to know whether our patients were grateful, or whether they were poor, loathsome sufferers from a surgical operation for which they daily cursed us. And yet only a year ago no less an authority than Senn wrote that he didn't believe that any patient lived who had ever submitted to a colotomy who hadn't rather be dead. Is it possible that he has had little or no experience with colotomy, or that, because his mind runs so strongly to anastomosis and excision, he is not perhaps as good a judge of what the operation will accomplish as those who do it every week of their lives?

In substituting an artificial anus in the groin for the natural one, it must be remembered that patients with cancer of the rectum, as a rule, have very little sphincteric power or ability to retain fæcal matter. Either there is a constant discharge, which necessitates the wearing of a napkin at all times, or there is a constant uneasiness and fear of accident which keeps them in close proximity to the commode day and night. To them one daily solid evacuation, even if it does escape from the groin, is a great advantage, and the choice is not between fæcal control by the anus and incontinence in the groin, but between one or two daily solid evacuations from the groin and a constant leakage of bloody mucus and fæces from the natural anus.

In choosing between extirpation and colotomy in non-malignant stricture and ulceration it is necessary to consider the amount of the disease, hence the extent of operation and the patient's ability safely to go through with it. Neither will be undertaken, of course, until it is evident that all other methods of treatment are useless. When this conclusion is reached it remains simply to choose between an operation in the groin of very slight risk and one upon the stricture having all the risks of extirpation for cancer. Where the stenosis and ulceration are of limited extent and easily approachable by the dorsal incision, and the patient is in fair general condition, extirpation is to be preferred; in other cases, colotomy. Here, also, it is to be remembered that a rectum after the operation of extirpation is seldom a perfect one in function, and that we often pay a large price in the way of risk for the choice between incontinence in the perinæum and incontinence in the groin.

Possibly, after what has been said, the essential ideas contained in this article may be stated more concisely as follows:

I. The operation of excision of cancer of the rectum has a very limited range of application.

II. Kraske's incision, though enlarging the scope of the operation, has, on the whole, in no way improved the results.

III. In colotomy we have a method of treatment almost free from risk and one that in any considerable number of cases will give a longer length of comfortable life.

IV. Extirpation is more often indicated in non-malignant than in malignant stricture, but even here the advantages over colotomy are not sufficient to justify the increased risk in grave cases requiring extensive operation.

REMARKS ON NASAL INSUFFICIENCY,

DUE MAINLY TO EXTERNAL STENOSIS.

By A. B. FARNHAM, M. D.,
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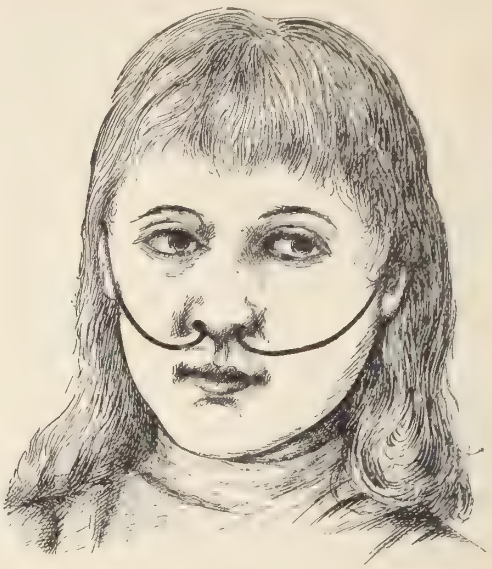
The surgeon often meets with a class of cases in which the nasal insufficiency is due not to any deflections or intranasal growths, but to the non-development or deformities of the alæ nasi. This condition is either congenital or acquired, principally congenital. A few cases in point will illustrate the subject, and the method of treatment which I find best adapted to give permanent relief.

Case A.—A young lady, twenty-three years old, with a history of alleged nasal catarrh lasting a number of years. Examination showed normal mucous membranes in the naso pharynx and no deflections of the sæptum or nasal growths. The cartilages of the alæ nasi were normal; external stenosis marked; main complication, deformities of the cartilages in the external, fleshy portion of the sæptum.

Treatment.—Dissecting out the cartilages alluded to in the fleshy portion of the sæptum, and the surgical enlargement of the aperture by a symmetrical extension of the external nasal orifices and the application of Fränkel's speculum by the patient herself, several hours daily for a number of weeks; result entirely satisfactory. Patient breathes through the nostrils without aid from the mouth, but the shape of the nose is altered from a Grecian to a slight *retroussé.*

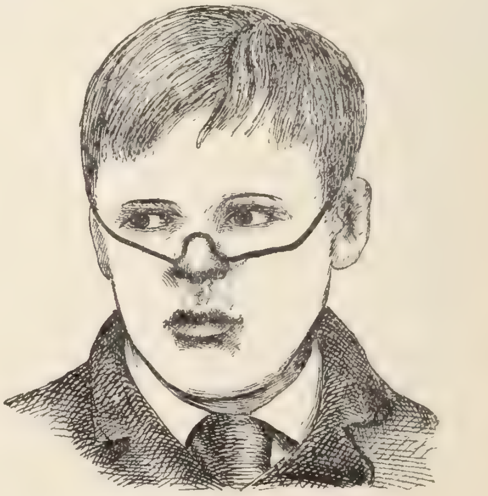
Case B.—A child, nine years old. Consulted me last November. External stenosis due to non-development of the alæ nasi; typical mouth-breather; no deflections of sæptum or nasal growths; third tonsil not enlarged; cartilages of fleshy part of sæptum hypertrophied and deflected. Under narcosis these cartilages were removed and the external orifices enlarged as in Case A. Massage of alæ employed, special pains being taken to develop the cartilages of alæ nasi so as to make them of marked outward convexity. After a short time lost sight of patient for a number of months. Patient afterward presented herself again, showing marked success of treatment on right side, and a most gratifying general betterment. The appliance shown in the cut was then fitted, and already the improvement is such as to justify the conclusion that the case is closed.

Case C.—A young lady, twenty-four years of age, with a history of many years of intermittent treatment for catarrh. Examination showed no catarrh of any consequence. Partial mouth-breather; slight deflections and small ridges on sæptum; opening of external right orifice not sufficient in caliber, perhaps barely sufficient on the left. Convexity of one of the cartilages of right ala, with the usual result in such cases of further shutting off the air when effort is made to increase the intake of air through the nostril. Treatment here called for a result to be gained by the addition of many littles. The small ridges were treated in the usual way; then the caliber on the right side was enlarged as in case A above cited; I then used the knife which oculists use for cutting the capsular envelope of cataract, and, exposing the cartilage, I snipped out a small portion of the center, making several star cuts. I then applied the wire—in this case only to the right nostril—the wire being placed in the nostril by myself each morning for a couple of weeks. The result, cartilage concave; and even on exertion patient breathes through the nose and not the mouth.



Case B.

Case D.—A lad, fourteen years of age. Nose very much enlarged; eczema around the alæ; typical mouth-breather. Examination showed marked deflection of sæptum to left, sæptum being enlarged to several times its normal size; external openings very small.



Case D.

Treatment.—Under narcosis, sæptum straightened and the thickness diminished surgically. Case called for treatment by two different and apparently conflicting methods. The orifices were enlarged, as in cases A and C above mentioned, on both sides, and after the healing had been nearly accomplished the cartilages of the ala were incised and the instrument shown in the figure applied and worn day and night for a number of weeks. A second operation was then called for to enlarge the external orifice on the right side. The result at this date is eminently satisfactory. Nose is now normal, quite symmetrical, and, when the instrument is not applied, the patient can exercise violently and breathe through his nose alone. The cut shows him a mouth-breather, but the object is to show the external application of the wire.

I have come to the use of this wire after many years' trial and rejection of more clumsy devices. The wire used is copper, No. 19, silk-wound. Properly applied, it is effective and does not irritate. I reapply it daily, as a rule, though a patient could be taught to use it himself.

This wire, properly bent, is all I usually use now in altering the shape of a nose or correcting deformities. Such alterations are usually effected through operations on the cartilages of the alæ nasi, and require a continuous and firm holding in place, which this wire enables me to employ.

In making the cut for symmetrical enlargement of the nasal orifice it is not well to cut the whole piece out at once, but to leave at the apex a bit of skin which can be folded back, and greatly facilitate the healing and modify the subsequent retraction. This skin can be dissected first before removing the piece. I find my forceps (figured on page 378 of the *New York Medical Journal*, vol. xlv) most useful for measuring and grasping the portion to be removed.

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A CONTRIBUTION TO
THE STUDY OF ATROPHIC RHINITIS.

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THE DENVER AND RIO GRANDE RAILROAD RELIEF ASSOCIATION, PUEBLO, COL.

Bosworth, in his *Diseases of the Nose and Throat* (vol. i, pp. 162, 163), advances the following theory with regard to atrophic rhinitis :

Commencing in a desquamative inflammation of the nasal mucous membrane, there is set up a purulent rhinitis which constitutes the early stage of atrophic rhinitis. Later in the progress of the disease the discharge lodging upon the turbinated bodies forms a closely adhering film. In drying, this film contracts, with the result that the circulation of the blood in the large venous sinuses of the turbinated bodies is hampered, the nutrient supply of the membrane is shut off, as is that of the bones themselves, and all the structures of the bodies waste until they become scarcely recognizable as ridges upon the outer wall. The potent causative factor in this scheme is manifestly the contraction of the film. Without questioning its contractile power or its ability to strangle structures which are intended to contract (though it is difficult to conceive of such a possibility, unless extreme intrinsic contraction has already taken place), it is plain that on this hypothesis, in the presence of dry air suspending dust, these films should be thicker, harder, and more destructive, and that every case of atrophic rhinitis should enforce the truth of this proposition.

In Colorado and throughout the dry belt of the United States the air is abnormally dry and at all times holds in suspension an immense amount of dust ; therefore, under the best conditions for its demonstration, every case of atrophic rhinitis occurring in this territory ought to fully exemplify this teaching. Opportunities for observation are not wanting, but facts to prove this theory are. This disease is exceedingly common in those who have spent much time in Colorado, and while dry air and alkali dust have been the factors in production, it has not been through drying of discharge that they have exerted their influence, nor have they had or needed any gratuitous assistance from a previous purulent disease. Restricted to this single theory of causation we would not be able to explain one in a hundred cases of this disease existing here. Something else is indicated ; something besides a bare proposition in mechanics is needed for the ninety-nine. We have in the study of atrophic rhinitis to do with a complex problem the equations of which may differ in different localities, but to which in Colorado dry air and alkali dust will usually give the key. These irritants, dry air and alkali dust, act as might be expected of them—the dry air intrinsically in demanding on the part of the secretory apparatus a larger amount of fluid, and the alkali dust by inciting to the parts a larger quantity of blood. These agencies, unceasing in their action, make their influence felt at the entrance of the respiratory tract, and as long as the turbinates sensibly respond to this excitation they bear its brunt. There is a time, however, when the turbinates do fail to meet these demands and when they not only cease to grow, but begin to waste. Of course, if this process could be demonstrated step by step, the relation of hypertrophic to atrophic rhinitis might be determined once for all, but in the very nature of things this is impossible. To be permitted to observe a case for years, or even months, without doing anything for its relief, or allowing the patient this privilege, is a concession granted only by martyrs to science, and, so far, such patients I have not been called upon to treat. In the absence, therefore, of ocular proof of the various stages occurring in a single case, we must content ourselves with the observation of numbers of cases and with seeking for some principle that underlies them all. As a result of a careful study of the disease as it occurs in Colorado, it is certain that the presence of dried discharge has nothing to do with its inception and very little indeed with its continuance ; for, while wasted turbinates are very often observed in those who have spent a number of years in this State, an almost invariable absence of noticeable fœtor or an accumulation of scales is suggestive of a physiological rather than a mechanical process. The observation of these wasted structures free from the classic accompaniments of stench and dried discharge enforces the idea that a hypertrophic stage must have preceded the present, and that, as a result of continuous and excessive stimulation, this has passed into one of exhaustion and of waste. This inevitable impression gathers force as the result of treatment is closely watched, for only on this assumption can the rapid approach to a healthy condition and appearance be explained. Only on the theory that we have to do in these cases with a condition of extreme exhaustion, rather than with one which, cutting off the supply of blood, is essentially necrotic, can we account for the easy reaccumulation of substance and the ready return to a condition of comparative health. In this view of the subject, made up as it is of the blending of many cases, the narration of the individual is a matter of slight importance, yet, as an illustration, it may even here have an appropriate place.

Miss C., the daughter of parents whose intelligent answers to inquiries entitle to respect the mother's assertion that, prior to an attack of diphtheria during the past winter, the patient never had any nasal disease, has well-marked atrophy of the turbinates, with hypertrophy of the faucial tonsils and general thickening of the pharyngeal walls. Subsequent to the illness above noted she had nasal discharge for a short time only.

Miss T., the daughter of a prominent physician of this State, and so under constant medical surveillance, has never had purulent rhinitis, though at present unmistakably suffering from the atrophic form.

Mr. G., recently an official of the D. & R. G. R. R., remembers a time when the nasal passages were closed, but presents for treatment a case of atrophic rhinitis, with supersensitive areas of the sæptum.

In the case of Dr. D. there is an interesting condition of turbinated hypertrophy on the right side associated with such marked atrophy on the left that the inferior turbinated is scarcely distinguishable from the general contour of the outer wall.

These cases, selected simply as types from a larger number belonging naturally to the one or the other class, offer forceful lessons in ætiology. All these patients have spent a number of years in Colorado, some of them their whole life, and in each of them, though the condition is so plainly written that "he who runs may read," yet in not a single one of them was there at the time of their first observation distressing scaling, nor was fœtor present in the slightest noticeable degree. This condition of physiologic atrophy (if such it may be termed) gives the strongest clew to the *raison d'être* of the pathologic form. But we are not wholly dependent upon theory for the usual course of atrophic rhinitis, for, by one of those rare strokes of fortune which more than once has done service to the cause of medicine, Dr. Clinton Wagner is able to record a case of hypertrophic rhinitis which, during an interval of several months from under his observation, passed into the atrophic form. To the mass of special students scattered throughout the land no argument is required to establish either the credibility of this witness or the competence of his testimony, and yet one author at least, for some inscrutable reason, has called the report in question.

As the object of this paper, offered simply as an attempt at explanation of the conditions that confront its author in daily practice, is not controversial in any sense, it is not necessary to further weigh the positive assertion of one observer against the theoretic statement of another. In the light, however, of the above-mentioned experience, Dr. Wagner's observation supplies the one necessary link to bind the two conditions together. On this positive basis of observation it becomes easy to follow the course of disease through the hypertrophic to the atrophic form; without this there is absolutely no way to satisfactorily explain the existence of atrophic rhinitis. It need not be denied that purulent rhinitis may result in atrophy, but doubtless in these cases the structures involved are destroyed by the severity of the original process, as in the case of diphtheria just related, to which the drying of discharge is an incident without moment. It is certainly logical to assume that in this case the acute disease enlarged before it finally, by its severity, overwhelmed these bodies. Except in point of time, it is not likely that the course of disease differed in this case from that in any other. Certainly purulent rhinitis must have a beginning, and from the moment of its inception the turbinates are subject to *ceaseless* stimulation, which must result in increased activity, in hypertrophy, and, if this stimulation is of sufficient duration, in exhaustion and waste. In the continuous character of the stimulation is the principle underlying every condition that results in atrophic rhinitis. It seems hardly necessary to point out that under these circumstances any increase in size must be in a double sense abnormal, and is in itself the strongest evidence of exhaustion.

Such hypertrophy, rapidly manifested, evinces the attempt of Nature to keep pace with the ever-acting stimulation, and its continuous increment of size is the measure of its failure. The limit must be soon reached and wasting the inevitable result.

To clearly realize between the effect of continuous and intermittent stimulation, we have only to examine the pharynx and the region of the pharyngeal tonsil. In these cases of physiologic atrophy, as I have taken the liberty to call them, we find hypertrophy of the pharyngeal tonsil, enlargement of the follicles of the pharyngeal walls, and varicose pharyngeal veins. So constant is this association that to see the one is with certainty to predict the other. Nor is the connection between them difficult to trace. The pharynx, at first protected by the turbinated structures from the immediate causes of irritation, receives its impress at second hand. Thus its stimulation is slight or intermittent and its gradual development is determined; but, as the turbinated hypertrophy gives way to atrophy, its growth is slowly continued until finally, when the turbinated bodies have practically disappeared and the whole work devolves on it, and when for the first time it receives the whole shock of irritation, it is in a condition of perfected growth very different from hypertrophy the result of acute and ceaseless irritation. This hypertrophy, occasioning endless annoyance, may, without correction, persist for years.

Sir Morell Mackenzie and Lennox Browne have both credited dust with the causation of nasal and pharyngeal diseases. John Mackenzie, as quoted by Dr. Browne, thinks that comparatively few cases of inflammation originate in this way; but I do not recognize in his failure to trace the connection between them the least objection to this view, for the city of his residence is noted for its many hills, its surface drainage, and its frequent rains, conditions that by the grace of God, despite the health authorities, insure clean streets and the minimum of dust, and his opportunities to note the effect of this agent are therefore necessarily limited. Were the field of his observation surrounded by many hundred miles of arid plain, he might find it necessary to change his opinion.

I am convinced that under these conditions, and traceable primarily to this cause, there exists a low form of inflammation of the turbinated bodies which eventually results in their atrophy; that the later stages of the disease give every evidence of having been preceded by hypertrophy; that the subjects of this disease present themselves for treatment of the throat, either entirely ignoring the nose or referring to it merely in an incidental way; and, finally, that this variety of atrophic rhinitis by its simpler process offers the logical explanation of the more complicated form.

THE CLIMATE OF EL PASO.

ITS ADAPTABILITY TO CURE CONSUMPTION AND KINDRED DISEASES.

By E. ALEXANDER, M.D.,
EL PASO, TEXAS.

I HAVE been a resident and practicing physician in this locality for the past seventeen years. One of the earliest and best discoveries I made here was the salubrity and delightfulness of this climate and its beneficent effect upon those suffering with incipient consumption and bronchial, dyspeptic, and rheumatic troubles, and to the best of my ability at the time I endeavored to call the attention of the world to the fact. During the earlier years of my residence here this portion of the country was not accessible by railroads, and while during that period I had but little opportunity to observe the effects of the climate upon invalids from abroad, I had abundant opportunity to study its effect upon the native population. Since the advent of the railroads in 1881 I, in common with all the other physicians of the locality, have had ample opportunity to observe the effects of this climate upon thousands of invalids and from every State in the Union; and this large experience and observation has confirmed in full measure my earliest and best convictions regarding this climate. It would be somewhat impracticable and perhaps unnecessary for this paper to specify the numerous cases or give the names of those invalids who have received permanent or temporary benefit from their residence here, and the degree of this benefit is measured by the length of their stay; but there are scores of them here to-day who are living witnesses to the truth of these statements. At every season of the year there are many invalids here, for the climate is so equable that the invalid is equally safe and comfortable at all seasons. A great impetus and confidence in the wonderful sanitary influence of this climate has very recently been given by the second protracted stay here of Mr. Jay Gould, the great railroad magnate and financier, of which the whole world is now aware. Mr. Gould, acting under the advice of his distinguished physician, Dr. Munn, hurried away from New York early in March an invalid, suffering acutely from bronchial affection, and when he arrived here it was apparent that his malady was serious. He stayed here nearly two months, and during that period he said to me, and he repeated it several times to others, that he had visited nearly all the great health resorts in the world and that he regarded the climate at El Paso better than any of them; that he received more benefit during his stay here than at any other place during a like period. Before going into detail about the climate, I will say that the latitude of this place is about 31° 50′ south and longitude 106° west; and I will here quote copiously from the several publications that have been authoritatively issued here from time to time, and formally indorsed and approved by committees of our people and physicians appointed for that purpose.

This climate can not be excelled for its sanitary qualities. The mercury has rarely been noted below 20° above, and then only for a few hours at a time. Snows seldom whiten the ground, and lie but a few hours. Damp, chilly days and hot, sultry nights are unknown. The heat of summer is not oppressive, and sunstroke has never been known. The sky is clear the year round. No entire day has been known when the sun and stars have not been seen. The atmosphere is unsurpassed for its dryness and purity; full of electricity, it is wonderfully exhilarating, and never burdened with malarious or poisonous exhalations. Blankets or cover of some kind are necessary for all on nights which follow the hottest days, because the nights are cool, though not damp. Sleeping with doors and windows open, or in the open air, may be practiced with impunity. The asthmatic invalid or the consumptive may sit out of doors, ride, or walk in the sunshine three hundred and fifty days in the year with pleasure and comfort, and may always enjoy refreshing sleep at night, thus securing the most essential conditions for the restoration of a shattered nervous system and broken-down constitution.

Free and full breathing of pure air is the most important for a sufferer from diseases of the liver and lungs. Make such a person breathe and he will live; whatever makes him breathe faster makes his blood flow more rapidly and be better aerated. His appetite will increase, and digestion and assimilation will respond to the increased action of the lungs which is secured by the elevation of this valley. Here one must breathe more freely and more rapidly than nearer sea level, and its air is as pure as any on the face of the earth. A permanent increase of breathing capacity caused by rarefied air prevents the formation of tubercles, and often heals those already formed. At this elevation (3,760 feet) this increase is not so great as to be injurious, as is sometimes the case in higher elevations. Such are some of the conditions which give to this valley (in this locality) an extremely healthy and invigorating climate, free from the malaria of the hot, damp regions of the river beds and lowlands of the Southern States, and from the mountain fevers, colds, influenzas, asthmas, and consumptions of the higher ranges of the Rocky Mountains and cold, foggy regions of the Northern States. A more desirable climate can not be found the world over. Persons shut out from the light of the sun are most disposed to consumption. For such, daily sunshine is everything. This country of which we write has more sunny days than any other region of the United States—probably more than any other place, not excepting Davos, Switzerland; and the invalid, therefore, can not but enjoy the benefit, unless he purposely excludes himself from it.

Florida and Cuba are warmer in winter, but they have an atmosphere loaded with vapor, and winter is the period of the greatest rains, and, consequently, cloudy days. The invalid seeking to regain health will not go to them if he follows the advice of Dr. Chambers in his lectures on the renewal of life. That eminent English physician says:

"In choosing a home for a consumptive, do not mind the average height of the thermometer or its variations, do not trouble yourself about the mean rainfall, do not be scientific at all, but find out by somebody's journal how many days were fine enough to go out forenoon and afternoon; that is the test you require, and by that you may be confidently guided."

Tried by such a test, the invalid must locate here. There is no rank, rich vegetation, saturated with moisture and constantly undergoing decomposition. Vegetation dries up, never rots. Meat, stripped and hung in the open air and sun in midsummer, will cure and is preserved without salt. Such air, when inhaled, gives a stimulus and vital force which can only be given by so pure an atmosphere. One having a predisposition to consumption comes to this valley and is immediately relieved. This altitude is not too high for the consumptive at any stage, except in the most extreme cases, and so with organic disease of the heart. Any person with a fair constitution who settles here or near here stands a better chance of enjoying a healthful life and of attaining his threescore years and ten than in any other part of the Union. To the young of consumptive families it offers special inducements. Here many a brilliant and useful life, which might otherwise be lost before reaching the meridian of manhood, may be prolonged to a vigorous old age.

Read the report of the committee of our physicians on sanitary conditions published below, upon which absolute reliance can be placed.

The influence of climatic conditions is an important agent for favorably modifying the course of various chronic diseases. There are few, if any, pulmonary affections or other chronic maladies which may not be either cured, suspended in their course, or relieved by the influence of judiciously selected climate. From the failure of the materia medica to cope with this disease, attention has been drawn to the modifying influence of climate upon chronic pulmonary disorders. The conditions of the soil and atmosphere favorable to the development of phthisis pulmonalis are well known. Damp, ill-drained land, cold, humid air, sudden changes of temperature, lack of sunlight, anthygienic surroundings—all contribute to depress the general health and to occasion the prevalence of consumption in low-lying districts and in large cities. It is therefore evident that, in the search for a climate for the prevention and cure of consumption, dryness of air and soil and the invigorating influences of sunlight must be substituted for the deleterious conditions of ground and atmosphere mentioned above.

That climate is a potent agent in the prevention of phthisis pulmonalis is demonstrated by the fact that a region of comparative immunity from disease is found in high altitudes. It is therefore proposed to elucidate some of the different factors which tend materially to modify and counteract the effect of diseases in this climate, and the invalid tourist and immigrant can not but see the extraordinary advantages to be derived by settlement in our midst.

The latitude and longitude having been given heretofore, it is found that the elevation of El Paso, the county seat of El Paso County, is near 3,760 feet, in round numbers, above sea level, and consists of an alluvial sandy deposit, exceedingly porous, and possesses a great faculty for absorbing water and moisture. Small and large ponds and marshes are notably absent; hence the fact, in view of the altitude, that so little malaria or malarial fevers are seen or known to complicate the ordinary prevailing complaints among the inhabitants of the valley.

The river water is muddy, but settles readily, yielding a pure and potable supply for every use. Wells are driven with but little difficulty, and water clear as crystal is secured anywhere from seven to fifteen feet.

The physical formation of land beyond the valley is diversified, being rolling *mesas*, broken foot-hills, and picturesque mountains. With the exception of the pass, El Paso is protected closely on the west, north, and south by a main spur of the Rocky Mountains, and a slightly elevated plateau is on the east side, extending some sixty or seventy miles.

Owing to the exceedingly great porosity of the soil, humidity of the atmosphere is very insignificant, even after a considerable rainfall. The soil receives much of its moisture from below the surface, and in this way supplies in a great measure its needs in the growth of timber, grasses, and vegetation. The paludal emanations of the soil, with little or no marshy lands or standing water, is so slight that the ordinary effects of malarial poisoning are rarely ever observed in one who has resided here any length of time.

It has been claimed that five or six thousand feet elevation furnishes an atmosphere superior to that of a higher or lower altitude; but such is not the case, for there are many conditions of atmosphere *per se*—such as degrees of moisture and dryness, temperature, relative velocity and general direction of wind, the natural surroundings—all of which make up the general salubriousness of the climate and better fit it for the invalid and consumptive. Other reasons why too great elevations above the sea level should be avoided is because of the too great aptitude to passive congestion of the lungs and heart, mountain fevers, cold, raw winds, inability too often of securing a sufficient variety of food and the ordinary comforts of a home life that may be had at lower altitudes. Altitude has a specially notable effect, inasmuch as there is a general increase in the bulk of the lungs and an enlargement of the chest of inhabitants of elevated regions. It also produces large dimensions of the air cells, enabling a freer discharge of accumulating secretions, permitting a larger influx of pure air, exercising a strongly antagonistic and germicidal influence, and rendering the lungs increasingly inapt to take up a tubercularizing action. With the rise above the sea level the air becomes rarefied and the atmospheric pressure is considerably diminished. At the height of 3,760 feet the atmospheric pressure is about thirteen and a half instead of fifteen pounds to the square inch, and the proportion of oxygen is diminished twelve per cent. This attenuation of the air produces important changes in the economy.

The mechanical effect of the rarefied air is to increase the frequency and depth of respiration and to accelerate the pulse. A greater amount of air must be inhaled to satisfy the demand for oxygen. Hence the lungs have a tendency to be completely filled, the elastic tissue of the vesicles is stretched, and the thorax is expanded to its fullest capacity. At moderate elevations the system quickly adapts itself to the lessened atmospheric pressure, but when great heights are rapidly attained, as with aeronauts, copious hæmorrhages from the lungs ensue. In the altitude of Denver hæmoptysis frequently occurs in consumptives in the stage of excavation.

Dr. Denison says: "The lessened tension of the air and the increased frequency of respiration force the blood to pass more quickly through the lungs, and the rapid and perfect renewal of capillary circulation is opposed to the stages of early and chronic inflammation. This improved capillary circulation, together with a more perfect expansion of the thorax, loosens and promotes the expectoration of the mucus and inflammatory *débris*."

It has been so often demonstrated beyond the possibility of a doubt that the combined conditions making up the climate of high altitudes do favorably modify the causes and course of phthisis, that the popular faith in this "mountain cure" is almost unbounded in both the laymen and the profession. El Paso offers many superior advantages to the invalid and pleasure-seeker by reason of its well-sheltered position from winds by its mountain ranges and terraced hills on the north and west; a slightly mean temperature, and in a notably less lower extreme range of this; absence of the essential elements of volatilized poisonous organic matter and mechanically irritant particles; the uniformly mild, dry air, which is bracing and exhilarating; so many bright, clear, soft, balmy days, never foggy, light or little dews at night, rarely ice in winter, and more rarely visited by snow. Equableness of temperature is the rule; sudden changes are comparatively rare.

Those ill-defined conditions included under the vague title of delicacy of chest may be completely removed by residence in El Paso, as likewise the tendency to winter attacks of bronchitis. Chronic bronchitis in all varieties, cirrhosis of the lungs, asthmo-emphysema, hay-fever, chronic pneumonia and rheumatism, and dyspepsia are always relieved, more often cured, and the disposition to recurring attacks of hæmoptysis effectually controlled.

Statistics afford us no guide yet to the rate and cause of deaths among the native population; still it is a notable fact to a close observer that pulmonary troubles affect them to a very limited extent, the writer having failed to find a case of consumption developed in this climate after nearly seventeen years' residence, unless it originated in hereditary scrofula or syphilis. The same is true with regard to other diseases; that there are few cases, most all of which recover—viz., typhoid fever, inflammatory rheumatism, sunstroke, hydrophobia, etc. Children's diseases are not so varied and less severe than in lower altitudes. Diphtheria is rare; scarlatina rare and of a mild type, seldom, if ever, fatal; never produces any of those ravages and after-effects so common in the East. The advantage of this place for pulmonary consumption in its incipient stages, and many other dreaded fatal diseases, has been too recently appreciated to allow extended statistics to be presented as to its benefits.

There is no more healthy place on the continent than El Paso. We believe her death-rate is, in fact, the lowest. The health physician here made the remarkable statement that since El Paso began to grow (1882) several thousand children have grown up here and not a single one has developed consumption or asthma. Furthermore, he added that eight out of ten asthmatics are entirely relieved and the other two benefited. The health physician, in a recent report to the city council, called attention to a number of interesting facts, all of them fortified by official data. He showed, among other things, that of the one hundred and forty-one signal-service stations there are but two—Fort Grant and Santa Fé—that report a smaller degree of mean relative humidity from September 1st to May 1st than El Paso. He also shows that the lowest temperature from 1880 to 1888 was 5° below zero in December, 1880, in which month the thermometer failed to rise above 32° on two days. There is one record—December, 1887—of 2° below zero; during that month the thermometer failed to rise above zero only on three days. This makes a total of five days' maximum below zero in eight years. The mean 7 A. M. and 11 P. M. temperature shows a cool, bracing atmosphere to be the rule; cold frequent, but extreme cold rare. The mean 3 P. M. temperature shows a delightful climate, yet not warm enough for bacillus of tubercle to thrive, as its growth entirely ceases below 32° F. and above 107°. The death-rate from January 1st to October 1st in the same year from natural causes was 7·15 in a thousand per annum, and among the present population, other than Mexicans, only five in a thousand per annum. Climatic charts show the most favorable conditions for El Paso; topographical conditions protect and favor her. In common with southern New Mexico and southern Arizona, El Paso is the best winter climate in the United States for consumptives and asthmatics and those suffering from other pulmonary diseases.

I quote here from what another physician says about El Paso:

> "The atmosphere can not be other than as pure and uncontaminated as any under the sun, having none of the factors producing a pernicious condition of the air anywhere within distance possible to bring such conditions about. The locality affords a purity of atmosphere truly vivifying and healing in its effects.
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> "A fact of especial value relating to the atmosphere here is its aseptic and non-putrefactive power. Lacking the factor moisture, of the heat and moisture necessary to promote putrefaction, it is notable that animal matter does not undergo putrefactive changes, but simply exsiccates and never becomes putrid. The same condition found all along the eastern side of the Rocky Mountains is here found exerting its power in an unparalleled manner and to an unequal degree.

"An examination of the tables for the past three years develops the following facts: That the average mean temperature for the five months May 1st to September 30th, for the entire period of three years, is 76·5° F.; that the same for the remainder of the year for that period is 53·8° F.; that the same for the entire year for that period is 63·2° F. That the mean humidity is a truly remarkable one—*i. e.*, 45·3. The average annual precipitation of moisture for that period was 13·11 inches. That of the aggregate precipitation, 39·35 inches, during the period, 27·41 inches, or nine thirteenths, was during the months June 30th to September 30th. The general course of the wind for each year and for the period was northwest, with west wind prevailing next in frequency. The average velocity of the wind for each hour of the entire period was 5·31 miles, with March and April as the most windy months. That the highest temperature is during the latter third of June and the lowest about New Year. Sunshine prevails almost constantly, and there are none of the distressing fogs elsewhere encountered. Nowhere on the continent are witnessed such magnificent and varied sunsets, which can be seen almost the entire year. Days 'dark and cold and dreary' are seldom seen."

Paso del Norte, the town in Mexico opposite El Paso, Texas, is a settlement of great antiquity, said to have been first settled in 1620, and presents the interesting features of agricultural pursuits by irrigation, Mexican architecture in dwellings, public buildings, and churches, the cathedral there being two hundred and forty years old, and the habits and customs, both social and sportive, of that nation so rapidly approaching complete intimacy of commercial relations with the United States. Nearly equidistant from San Francisco on the west, New Orleans on the east, St. Louis and Kansas City on the north, and the city of Mexico on the south, with direct trunk-line railroad connection with all of them, as well as many other large cities intervening and beyond them, promises to make it a city great in resources and advantages of every nature. The city affords healthful and pleasurable surroundings, whatever may be desired or necessity demand, and the adjacent region affords every facility for drives over splendid roads, every turn of which presents new views of mountain scenery of absorbing grandeur and beauty, while the sportsman, be he hunter or angler, can, with little trouble, find game for gun and hook.

Situated as it is on the Rio Grande, the boundary of the United States and Mexico, opportunity is afforded to visit the Mexican people in their own native country and homes and study the Spanish language.

As to food, the locality, together with the means of quick and preservative transportation, places at command everything, from the local abundant supply of fresh vegetables and fruits, including the delicious grapes of the country, with the grape wines equaling any in the world, to the northern products of the United States and the numerous tropical productions of Mexico. The markets afford articles to meet every requirement of necessity or fancy. Taking everything into consideration, we say that this spot is equaled by few places in the world for healthful features, and it takes a great many elements to make a perfect health resort.

REMOVAL OF THE MAMMARY GLAND.*

By R. O. OWEN, M. D.,
LYNCHBURG, VA.

There is probably in the whole surgical field no operation the recovery from which taxes the patience of both the doctor and his patient as that of the excision of the mammary gland or the entire breast.

The female breast is peculiarly liable to malignant growth. In fact, a large percentage of growths within the female breast are of, or if neglected will assume, a malignant type. It has become my practice to regard all pain, enlargements, and other abnormal conditions of the breast with suspicion, and, if this condition continues, to advise early excision. Probably the greatest drawback (from the patient's point of view) is the length of time necessary for recovery from the operation. The old method of operation was, in brief, as follows:

The patient being anæsthetized, two semilunar incisions are made around the breast through the skin. The growth is then dissected out, the bleeding points secured and the oozing stopped, and the two flaps brought into apposition by the interrupted suture; a drainage-tube run through the wound in its long axis, the wound dressed antiseptically, and the patient put to bed to wait for long, weary weeks for union by granulation.

It has been my fortune to have seen and operated on rather more than my share of these cases, and my success recently in securing quick union leads me to believe that this report may receive some consideration, as the operation performed in these cases differs in some material points from those laid down by the authors of the various works on surgery. I can probably explain the *modus operandi* of my operation more clearly by giving an account of one or two cases.

Miss L., of Virginia, aged nineteen, had menstruated for five years; slight family history of cancer. She was admitted to the hospital on April 2, 1892, and upon examination I found ulcerated scirrhus of the right breast, involving the entire mammary gland, and about the size of a large orange. With the assistance of Dr. Snead and Dr. Blackford I operated on April 8, 1892, the patient being anæsthetized. The breast was first washed with soap and water, then with warm water, then with sulphuric ether, and lastly with a solution of bichloride of mercury (1 to 2,000). Two semilunar incisions were made above and below and the growth excised. The bleeding vessels were controlled by torsion and the oozing left uncontrolled; deep interrupted sutures were then taken every half-inch, except for a space of half an inch, at each extremity of the wound. Before any of these sutures were drawn, a moderate-sized drainage-tube was placed through the entire long axis of the wound. The flaps were then drawn together by the deep sutures and the wound closed, except at each extremity. A needle was then threaded with very fine silk, and the skin along the entire (closed) length of the wound was brought into close apposition. The wound was then flushed out through the drainage-tube (still *in situ*) with a quart of warm Thiersch's solution. The drainage was then withdrawn, and the openings through which it passed were brought into close apposition by both deep and close superficial sutures. The whole length of the incision was then painted with iodoform collodion. The oozing having been left uncontrolled, the entire cavity filled with blood, which was unable to escape on account of the superficial sutures, and which by reason of its pressure controlled further oozing. Thirty-six hours after the operation, one deep and several of the close superficial sutures at each end of the wound were removed, and by gentle *bimanual* pressure the contained clot was removed; the wound was then flushed out with warm Thiersch's solution and injected with a small syringeful of the following:

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* **Read before the Medical Society of Virginia, September 15, 1892.**

℞	Aristol	ʒj;
	Acidi borici	ʒss.;
	Ung. resinæ	℥j;
	Olei olivæ	ʒiij;
	Acid. carbolic (liquid)	gtt. x.

M. Sig.: As directed.

Two pads of moist Linton gauze were then placed respectively over the upper and lower flaps. These pads were held *in situ* by long bands of rubber adhesive plaster, extending from above the clavicle to the middle of the abdomen, and others extending half way round the body. These plaster strips served the double purpose to hold the pads *in situ*, but principally to equalize pressure and prevent any strain on the sutures. Over this was placed one thickness of Linton gauze and then a thick layer of borated cotton, covered by another thickness of gauze. The whole was covered by a piece of oiled silk and secured by a roller bandage. This was removed, and on the sixth day after the operation the superficial stitches were removed; on the tenth day after the operation the deep sutures were removed, and on the eighteenth day the patient returned home perfectly cured.

The main points of the operation are, first, the control of the bleeding vessels by torsion. It is, unfortunately, the habit of many modern surgeons, with a false idea of economy of time, to seize the bleeding point and the adherent surrounding tissue *en masse* and by a vigorous twist try to stop the bleeding. This method is often productive of more evil than good; for, if the mass of tissue so treated be twisted tightly enough to control the bleeding, it is liable to slough and give you foreign matter in the wound, or, if not twisted tightly enough, there is a probability of secondary hæmorrhage. My method is to separate the vessel from the surrounding tissue as cleanly as possible, and with a pair of Kœberlé's forceps to catch it at the end and draw it out, while with another forceps I grasp the vessel a quarter of an inch from the end and hold it firmly while I give two or three steady turns with the forceps which holds the end. Sometimes I employ a *serre-fine* to hold the twisted portion of the vessel till I have passed the deep sutures to close the wound. When the *serre-fine* is used, it should (as in abdominal operations) be accounted for, for I have personal knowledge of a *serre-fine* having once been sewed up in the breast by one of my colleagues.

The great feature alleged in this operation is the perfect closing of the wound after cleaning it thoroughly and allowing it to fill with oozed blood. The most violent partisan of modern antisepsis can but acknowledge that one's own blood is certainly aseptic as regards one's self, and no more rigid antiseptic precautions could be taken or no more perfect asepsis preserved than to allow such a cavity to fill with the patient's own blood. Much time is sometimes lost and the patient kept unnecessarily long under the anæsthetic by the slow process of controlling oozing by means of hot water, cold air, etc., while if you use styptic applications or the cautery you immediately have a foreign body in the wound, which will in the vast majority of cases cause some suppuration. The method which I employ has not only the advantage of stopping the oozing by the pressure of the contained clot, but the additional advantage of filling the cavity with a perfectly aseptic material. The union which is obtained by this method is something between a primary and a secondary union, for the interior surfaces of the wound are covered by small granulations, which, when held together by the pressure of the pad after the removal of the clot, unite so quickly as to resemble closely primary union. This saves much time and enables us to discharge our patient much more quickly, as in the case of Miss L., who drove fifteen miles across the country on the eighteenth day after the operation.

In one case—that of a negro woman of thirty years on whom I operated some time since—I did not expel the clot, but allowed it to remain, hoping that it would organize (as in cases of clubfoot reported by A. M. Phelps) and thus preserve to some extent the contour of the breast. In this I was only partially successful, but feel that with more experience in this particular line I may yet achieve better results.

Since writing the foregoing I have measured the last two patients on whom I operated and find the breasts practically of the same size. The measure was taken by means of lead ribbon.

A CASE OF
FIBROUS EPITHELIOMA AT THE ROOT OF THE TONGUE.*

By JONATHAN WRIGHT, M.D.,
BROOKLYN.

The following case is reported because of its extreme rarity and because it possesses certain features unique, at least in my experience, and possibly in medical literature:

P. W., aged sixty, came to consult me on July 19, 1890, and these are the notes from my case-book:

He is a nervous, active man, with many large business interests. There is no hereditary history of interest obtainable. There is no history of syphilis. He is a moderate drinker and smoker. He has suffered for many years from nervous dyspepsia and constipation. For sleeplessness at night he has been accustomed to take large doses of svapnia (a preparation of opium). He has never had any throat trouble previous to last March, when he noticed a spasm of the glottis in drinking water. There was little or no pain associated with it. This reflex trouble in swallowing became gradually so marked that he could only swallow cool water a little at a time. He has less trouble with warm water. The spasm would at times come on at night, so that, as he expresses it, he thought he was going to choke. He has difficulty in taking solid food from the same cause, worse at times than at others. In speaking much during the day his throat becomes dry. He has a tired feeling in his tongue, and slight twinges of pain occasionally shoot to his ears. He has lost no flesh of consequence. He is a robust-looking man for his age.

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* Read before the American Laryngological Association at its fourteenth annual congress.

Examination by direct inspection shows nothing abnormal excepting a reddened fauces. Introduction of the laryngoscope produced a spasm of the glottis, which caused the patient at first to start from the chair; he gradually became accustomed to it, however. At the base of the tongue two prominences—one at each side, about three quarters of an inch long—can be seen on its dorsal or upper surface, running forward and occupying at each side the posterior two fifths of the organ. On palpation they feel hard and firm, but when the tongue is spasmodically retracted, as it usually is during examination, it is with some difficulty that these ridges can be distinguished from the longitudinal muscular fibers in a condition of contraction. At the base there is great congestion and redness, with a quantity of mucus and saliva between the epiglottis and the tongue. The lymphoid material is red, swollen, and hypertrophied, and rubs against the epiglottis, which seems to be red, stiff, and hard, but not swollen. A good view of the glosso-epiglottic fossa, therefore, is hard to obtain. The veins are large and congested. The reflexes are all abnormally excited. No distinct tumor or ulcer can be made out. The larynx is practically normal, there being only some slight thickening of the mucous membrane over the arytænoid cartilages and between their tips. No abnormal glandular enlargement can be made out. The submaxillary glands are large and prominent, but the patient says they have always been so. They are not hard to the feel, and can scarcely be distinguished from the cellular tissue.

October 1, 1890.—The patient has been seen on the average once a week, but irregularly on account of his business arrangements. The ridges of hypertrophied tissue and the enlarged veins and lymphoid follicles have been cauterized with the galvanic cautery, and applications of nitrate of silver, a drachm to the ounce, were made. The nostrils, which were slightly occluded, have been relieved by cauterization. The greatest care has been given to his stomach and bowels. There has been a slight improvement in the symptoms, and the local condition has improved somewhat, there being less inflammation and congestion at the lingual base. The reflex trouble in swallowing has abated very much. He has gained several pounds in weight and declares himself much better.

From this history, I thought the cause of the trouble was hypertrophy of the lymphoid tissue at the base of the tongue, the great irritability of the part being due to the excessive gastric and intestinal dyspepsia and constipation and the general neurotic temperament of the patient. Nevertheless, the suspicion of malignant disease was entertained from the first and was never abandoned.

14th.—Latterly the patient has complained a little more of pains shooting to his ears and of the secretion in his throat. The cautery has not now been used for six weeks. Examination shows now an increase in the congestion at the base of the tongue, and there seems to be some increase in its size, though this can not be positively asserted. On raising the epiglottis, pain was caused, and the red surface bled a little. A lymphatic gland lying on the submaxillary on the right side was found to be enlarged. The right glosso-epiglottic fossa seemed a little fuller on the right side than on the left. My suspicions of malignant disease being strengthened, at the patient's request a consultation was had on October 8th with a member of this association. The latter was not able to make a positive diagnosis, but was inclined to think there was a neoplasm in the substance of the tongue. Applications of Mandl's solution of iodine were made two or three times a week, with no result.

29th.—I have learned that the patient for two years previous to the beginning of his trouble was accustomed to pass a stomach-tube on himself in order to wash out his stomach. He noticed that it hurt him on one occasion and he desisted.

On October 3d to 4th the patient was examined by another member of this association, who, after a very careful examination, was unable to make a positive diagnosis, but thought the probabilities against cancer. As this coincided with my own convictions, the patient and his family were notified of the result of this consultation, as well as of the first. At the suggestion of the latter consultant, the patient was given mixed treatment, but this aggravated his condition so that it was soon abandoned. He complained of a great deal of pain in his throat as a result of the last examination.

November 7th.—The patient, very naturally, having become dissatisfied, went to Dr. McBurney, who made the diagnosis of carcinoma in the submaxillary region and proposed an operation with the view of preventing or lessening future suffering. Dr. McBurney was able to make out a mass, by palpation, which was exactly in the median line, involving the under portion of the tongue near its base, and the tissues anterior, which neither I nor the other gentleman had been able previously to appreciate, possibly due to its less complete development. Before submitting to the operation the patient consulted still another member of this association, who made the diagnosis of cancer with ulceration at the base of the tongue, and advised against operation.*

24th.—Operation to-day by Dr. McBurney, who extirpated the whole tongue, the hyoid bone and epiglottis, and some cellular tissue from the side of the larynx. The growth was found to be in the substance of the base of the tongue, involving also the hyoid bone. It felt extremely hard and fibrous. There was no infiltration of the submaxillary gland itself. The growth sent upward and forward two prolongations into the substance of the organ, one on each side, which were the ridges noted in the history. There was no ulceration or solution of continuity anywhere on the surface.

A microscopic examination by Dr. Hodenpyl showed the growth to be a fibrous epithelioma.

May 11, 1891.—Patient's death notice was to-day seen in the papers.

Dr. McBurney, at my request, has added the following facts to the patient's history subsequent to the operation:

"P. W. made a rapid and very perfect recovery. He was fed by the rectum for several days, and then with the stomach-tube, which was readily introduced. He gradually learned to swallow fluids and even soft food without assistance, and could articulate so as to be readily understood. Accumulations of saliva and mucus were difficult to dislodge and gave considerable annoyance. No recurrence of disease occurred, but in April the patient became quite melancholic and hysterical, and gradually lost strength and vitality, without developing disease of any kind. He died in a feeble state, without any evident cause, in May last, and without any distress or pain.

"Charles McBurney."

Butlin,† out of eighty cases of carcinoma of the tongue, reports one as occurring at the base. No details are given.

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* This was a mistake on the part of the observer, as will be seen in the next paragraph. Reports of the paper in the various laryngological reviews have erroneously stated that there *was* ulceration toward the last. That there was no ulceration from first to last makes the case most peculiar if not unique.

† *Diseases of the Tongue*, p. 260.

Noquet* has reported a case of epithelioma just in front of the epiglottis, and Rosenberg † also has given an account of diffuse cancerous infiltration and ulceration at the base of the tongue.

PRACTICAL POINTS IN THE TREATMENT OF SOME COMMON DISEASES OF THE EYE.‡

By W. C. BANE, M. D.,
DENVER, COL.,
LATE LECTURER ON DISEASES OF THE EYE AND EAR IN THE WESTERN PENNSYLVANIA MEDICAL COLLEGE, PITTSBURGH.

The conventional ten years that I devoted to the general practice of medicine before limiting my work impressed me very forcibly that there was a wide difference between the theory and the practice of medicine.

Seven years have elapsed since one of my preceptors remarked to me that "it required five years to become informed in ophthalmology." Experience has taught me that five years is too short a time. When we cease to be students we should be placed on the retired list.

The points that I present on some of the diseases involving the conjunctiva are not new, but I trust that they are practical.

Inflammation of the margins of the eyelids, termed blepharitis, is most common in persons of feeble constitution; scrofulous children are especially subject to this affection. Eye-strain is one of the exciting causes, especially in persons having errors of refraction. It is frequently a sequela of measles. The treatment varies with the constitution of the patient and the exciting cause. First, place the digestive organs in as good a condition as possible. The food must be plain, nourishing, and taken at regular intervals, and the body cleansed frequently.

Pure air and frequent bathing are as essential to success in the treatment of subacute and chronic diseases of the eye as in diseases of other portions of the body.

Errors of refraction must be corrected to prevent relapses. Any crusts adhering to the margins of the lids or stunted cilia should be removed. If ulcers are found beneath the crusts, they should be touched lightly with tincture of iodine or carbolic acid, the application to be preceded with a ten-per-cent. solution of cocaine and followed by an oil.

An ointment of the yellow oxide of mercury is an excellent local remedy. Most authors direct that the ointment contain from eight to twenty-four grains of the mercury to the ounce. I believe the ointment thus made is too strong and acts as an irritant. An ointment containing but half a grain to two grains to the ounce is sufficiently strong. The base of these ointments is mostly of petrolatum. I have observed that with some persons any of the forms of petroleum act as an irritant. For such patients mutton tallow or lanolin is the best substitute for petrolatum.

The iodide of thymol, otherwise known as aristol, applied dry or in the form of an ointment, is an excellent local remedy in cases with ulcers beneath the crusts.

Internally the iodide of iron, in the form of syrup, has been my preference in the delicate and scrofulous.

One of the common affections of the eyes, involving the conjunctiva of the ball and frequently the epithelial covering of the cornea, is phlyctenular conjunctivitis. It is characterized by one or more small blisters filled with serum and surrounded by injected blood-vessels; the blister breaking down, it is converted into an ulcer. The subjects of this disease, as with the one just referred to, are usually delicate and of a strumous habit. The disease manifests itself most frequently during the first dentition and at puberty.

In many of the patients, and especially in children, we find an excess of catarrhal secretion from the nasal mucous membrane. I have experienced difficulty in treating some of this class successfully. There is invariably an unhealthy state of the digestive organs, brought about by irregular meals, sweetmeats, and pastry. The food should be plain, wholesome, and partaken of at regular intervals. Calomel, in one-tenth-grain doses three or four times daily, meets the indications in many of these patients. Where the stomach would bear it, I have for most of my patients prescribed iron in the form of iodide, and in delicate, scrofulous children it has been my habit to prescribe pure cod-liver oil, to be administered by inunction two or three times daily.

Locally, the application of water as warm as can be borne, for ten minutes four or five times daily, assists in the relief of the congestion and pain. For several years it has been my custom to add five grains of chlorate of potassium to the ounce of warm water, directing that it be applied with a dropper or fountain syringe directly into the ulcers. I am satisfied that the ulcers heal more rapidly with the chlorate solution than with the water alone. Atropine is indicated in some cases to put the accommodation at rest. One grain of ointment of the yellow oxide of mercury, applied once daily, will assist in healing the ulcers. The iodide of thymol is quite as valuable in ulcers of the conjunctiva and cornea as in blepharitis.

While the local treatment in phlyctenular cases is very necessary, the constitutional treatment, with the proper food, is quite as important.

I have seen thin, anæmic children improve wonderfully in one week on the mild chloride of mercury internally, with cod-liver oil by inunction.

Acute catarrhal conjunctivitis will, in many cases, get well without any treatment. Locally, the use of a mild astringent, such as a ten-grain solution of boric acid, or a half-grain solution of nitrate of silver, applied three or four times daily, will assist Nature materially. The eyes should be shaded, but not bandaged. Internally, whatever is indicated by the state of the system. The nasal mucous membrane should always be examined and treated if needed.

Subacute catarrhal conjunctivitis may be excited by an affection of the lacrymal apparatus, in which case it is termed lacrymal conjunctivitis, or by nasal catarrh, or by eye-strain in cases with anomalies of refraction. As the latter exist in from seventy-five to ninety per cent. of the civilized race, it is an important causative factor.

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* *Bull. méd. du Nord*, 1889, No. 8 (ref. Rosenberg's).

† *Deutsch. med. Woch.*, 1892, No. 14.

‡ Read before the Colorado State Medical Society, June 21, 1892.

Catarrhal disease of the respiratory passages is very common, especially in the climate of Colorado.

The membrane lining the lacrymal sac and the nasal duct being continuous, we can readily understand why nasal catarrh is frequently a cause of conjunctivitis.

The treatment must vary with the cause and complications.

Partial stenosis of the nasal duct, if due to a swollen condition of its lining membrane, can be relieved by suitable astringents, such as a half-grain to a grain solution of the iodide or the chloride of zinc, and, when necessary, a probe must be used. Any errors of refraction should be corrected by the proper adjustment of glasses.

In acute dacryocystitis there is but one indication, and that to subdue the inflammation as rapidly as possible. If pus has formed, it should be evacuated early, saving the sac and avoiding, if possible, a fistula.

In the treatment of chronic dacryocystitis the inexperienced might be at a loss to know which of the various methods, as given in our text-books, he should follow. One able eye surgeon will advocate one method, while another of equal ability will condemn it.

In most cases the stenosis is due to inflammation and catarrhal changes of the upper portion of the nasal duct. When the stricture is soft, the astringents already mentioned may be of service. In this affection, a 1-to-1,000 to 1-to-500 solution of pyoctanin is of value as a germicide. When the lining of the duct is hypertrophied and firm, a probe will be necessary. I do not believe that the canaliculi should be sacrificed in every case of stricture of the duct, for, when the canal has been slit and a probe passed daily for several days, the function of the canal is destroyed. My attention was called to this point by Dr. Born, of New York, Dr. Knapp's chief assistant. It is possible to pass a No. 5 Bowman's probe in some cases by simply cutting through the puncta. Some of our eye surgeons practice the slitting of a canaliculus and stricture with the knife, following it with the large probes of Theobold, not hesitating to use the No. 16, which is 4 mm. in diameter.

The advocates of this method of treatment allege for it rapid cures. My experience with it would not warrant me in praising it or condemning it, except to state that the study of the anatomy of the bony canal will convince any one that but a very small percentage of the skulls will permit of the larger probes being passed without fracture of the bony walls of the canal.

In an excellent and timely article by Dr. G. M. Gould, of Philadelphia, the following statement by Dr. S. D. Risley is quoted: "That, in examination of a number of dry skulls, he found none the lacrymal ducts of which admitted the passage of the large probes advised for probing the living, membrane-lined, and therefore narrowed canal." *

However, the most sensible treatment of tight strictures is to slit them freely with the Agnew knife or its equal; then keep the canal open with probes as large as the canal will admit of without fracture of the bone.

Trachoma or granular ophthalmia has for ages been one of the dreaded diseases that involved the conjunctiva. And not to the sufferer alone, but also to the physician. Until within the past few years the treatment has been anything but satisfactory.

During the acute stage of trachoma, as with all acute purulent and muco-purulent affections of the conjunctiva, the treatment should be to keep the surfaces clean, the inflammation subdued, and the parts lubricated. The cleansing may be done with a mild solution of boric acid, or of the bichloride of mercury, the latter not stronger than 1 to 4,000. Strong applications, such as ten-grain to twenty-grain solutions of nitrate of silver, should not be used in this stage, as they intensify the inflammation and increase the pain. Cold or hot water compresses, applied for fifteen to twenty minutes every half-hour, help to relieve the congestion and pain. Where there is much tumefaction of the conjunctiva, it should be depleted by scarification, and the inflamed tissues should be kept lubricated with white petrolatum or its equal.

The correct principle upon which to treat acute ophthalmia has been concisely presented by Dr. Wolfner, of St. Louis.*

In the treatment of trachoma our object should be to restore the tissues to a healthy condition in the shortest time possible, without permanent injury to the normal structures.

The judicious use of the mitigated stick of silver or the crystal of sulphate of copper will certainly cure many cases of granular ophthalmia in from three to six months. One objectionable feature of this treatment has been that the patient tires ere he has recovered, and either changes his physician or, for various reasons, neglects the treatment altogether.

During the past decade a variety of mechanical methods of treatment have been introduced, some of which are excellent; others, while effectual in curing the disease, have been condemned on account of the destruction of normal tissues.

After a perusal of the writings of eminent eye surgeons on the treatment of trachoma, the inexperienced would be in doubt as to whose method to adopt. There exists such an independent disposition among the leading eye surgeons —as with all practitioners—that they are slow to adopt a brother practitioner's method or instrument, but will improve (?) upon it, or offer a different method. Consequently we have a variety of methods and means.

The method of treating trachoma by compression, or squeezing of the granulations, has been advocated by Dr. Hotz,† of Chicago, Dr. Noyes‡ and Dr. Knapp,# of New York, and others. The three named differ only in the instruments used.

Dr. Hotz uses his thumb-nail for the upper lids and a

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* *New York Medical Journal*, June 4, 1892.

* *Annals of Oph. and Otol.*, vol. i, p. 29.

† *Archives of Ophthal.*, vol. xv, p. 147.

‡ *Text-book on Dis. of the Eye*, 1890, p. 321.

Archives of Ophthal., vol. xxi, p. 119.

toothless, curved forceps for the lower lids. Dr. Noyes uses curved, grooved-bladed forceps of his own device. Dr. Knapp, after trial with other instruments on the market, devised a forceps that is called the roller forceps for trachoma. While, by the old method previously alluded to, we consumed months in the treatment of trachomatous cases, under compression the patients are well in a few weeks; one operation is usually all that is needed to effect a cure.

Of the various mechanical methods of treatment, that by the roller forceps is to me the best; the instrument is easily handled, does the work quickly, and causes less bleeding and destruction of the conjunctiva than any other instrument with which I am familiar.

My experience with the roller forceps, while limited, has been highly satisfactory. The one I have here differs from the one illustrated in the *Archives*, having been improved by Dr. Knapp.

As to the mode of application, I can not do better than to give you Dr. Knapp's instructions, as recorded in the *Archives*, viz.: "The patient is etherized, except in mild cases of superficial granular deposition, in which cocaine anæsthesia penetrates deeply enough to perform the operation without pain. The upper lid is everted, seized at the convex border of the tarsus with an ordinary forceps, and drawn off the eye, so as to expose the whole palpebro-bulbar conjunctiva. The infiltrated part is then, or is not, superficially scarified with the three-bladed 'sillonneur' of Johnson. One blade of the forceps is pushed deeply between the ocular and palpebral conjunctiva, the other applied to the everted surface of the tarsus. The forceps is compressed with more or less force downward, and the infiltrated soft substances squeezed out as the cylinders roll over the surface of the fold held between them. This manœuvre is repeated all over the conjunctiva until the granules and the juice are completely pressed out of the tissue. The forceps passes two or three times over the same place until the absence of resistance proves that all the foreign tissue substance is removed. The lower lid is treated in the same way, only it is not necessary to use fixing forceps." All of the granulations are to be squeezed. The subsequent dressing consists of cold compresses for twenty-four hours, and cleansing the tissue with 1-to-5,000 bichloride solution.

Steele Block, Sixteenth and Stout Streets.

The Alvarenga Prize of the College of Physicians of Philadelphia.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about one hundred and eighty dollars, will be made on July 14, 1893, provided that an essay deemed by the committee of award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but can not have been published, and must be received by the secretary of the college on or before May 1, 1893. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within it the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the college; other essays will be returned upon application within three months after the award. The Alvarenga prize for 1892 has been awarded to Dr. R. H. L. Bibb, of Saltillo, Mexico, for his essay entitled Observations on the Nature of Leprosy.

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THE TREATMENT OF CHOREA AND EPILEPSY WITH MICROBIC PRODUCTS.

Lyon médical for October 23d publishes a report of the October meetings of the Lyons Société des sciences médicales, at which M. Lannois spoke upon the subject of a communication presented to the society by M. Kohos concerning researches which he had undertaken in M. Lépine's service. He was only at the threshold of his investigations, he remarked, and the results obtained had but a provisional value. Facts analogous to those reported by M. Kohos were far from being rare and had long been known. In the case of epilepsy this was true; Hippocrates had known it to be true in that of malarial disease, and M. Séglas and M. Quérian had devoted their theses to the more or less complete disappearance of epilepsy under the influence of erysipelas, acute articular rheumatism, pneumonia, pleurisy, etc. M. Féré had seen vaccination play the same part. Finally, M. Marie had recently called attention to these facts and had suggested the treatment of epilepsy by soluble microbic products or by substances exerting an analogous action, such as Liebreich's cantharidate of potassium. It was evident that it was not the temperature that caused the disappearance of the paroxysms; M. Lannois had under treatment at the time an epileptic young woman whose paroxysms had remained in abeyance during the course of a phlegmonous erysipelas, but who, on the contrary, was now having as many as four daily while suffering from typhoid fever contracted in the ward, her temperature being about 105° F. Moreover, non-febrile diseases, such as syphilis and certain chronic suppurative inflammations of bones, also arrested epileptic paroxysms.

After having employed small doses of the cantharidate, M. Lannois had made subcutaneous injections of a filtered culture of the *Staphylococcus aureus.* Having no epileptics under favorable conditions, he had at first given the injections to two young persons affected with chorea—one in an advanced stage, who was rapidly cured, and the other at the outset of the disease, who was so speedily improved that at the time of the report he might be considered cured.

In the epileptic young woman (affected with symptomatic epilepsy) the paroxysms, which had previously occurred every six or eight days, were wanting for fifteen days, but reappeared under the influence of retarded menstruation. That, of course, proved nothing; moreover, the patient had received too small doses—one c. c. every other day.

In another case the results had been more marked. It was that of an epileptic who had very frequent paroxysms every day, rarely fewer than eight, and even ten or twelve. During the preceding year he had been trephined, with the result of arresting the paroxysms for a day or two. Last winter a more extensive trephining had been accompanied by an erysipelas which caused cessation of the paroxysms for three weeks.

The trial of injections of filtered cultures, therefore, appeared justifiable in his case, and it was shown by a record presented that the diminution in the number of the paroxysms had carried the figure to four, and even two, after injections of 2 and 4 c. c. of the liquid. Evidently this result was only provisional, but it was also enough to encourage a continuation of these experiments.

To guard against local inflammatory reaction in the use of these injections, certain antiseptic precautions were sufficient. In his cases the temperature, carefully taken, had risen only twice and had not reached 102·2°, and there had been no albuminuria.

The speaker believed that it was preferable to use liquids produced by streptococci, for the erysipelas and suppurations that could be imputed to streptococci appeared to be the diseases that acted best upon epilepsy.

It would evidently be premature, M. Lannois added, to speak of the *modus operandi* of these substances at present; nevertheless it might be remarked that the liquid furnished by M. Courant, with which the experiments had been performed, contained two substances, one of which had the effect of producing convulsions, and the other of which was anæsthetic.

Now, at a previous meeting of the society M. Pierret had reported the favorable action of convulsivant drugs in the treatment of epilepsy; they exercised a regulating action upon the nervous current, and, by facilitating its expenditure, prevented the accumulation in the nervous system of a force the sudden discharge of which would produce the epileptic paroxysm. One might suppose that the same was true of the liquids proceeding from cultures of the *Staphylococcus aureus;* at all events, if the results were obtained with the liquid, there would be occasion to experiment with its two constituent substances separately.

CORROSIVE SUBLIMATE A POOR GERMICIDE.

Klein's statement, made in 1884, that mercuric chloride was of no more germicidal value than vinegar has certainly received confirmation in the experiments of Mr. Charles T. McClintock, published in the *Medical News* for October 1st and 8th. In his studies regarding the value of corrosive sublimate as a germicide, he not only found that vinegar containing from 6·3 to 7 per cent. of acetic acid had as much influence in inhibiting the growth of micro-organisms as a 1-to-1,000 solution of corrosive sublimate, but furthermore that the *Staphylococcus pyogenes aureus,* the *Bacillus subtilis,* Eberth's bacillus, and germs in fæces would withstand the action of a 1-to-1,000 solution of corrosive sublimate from an hour to forty-one hours.

The general use of this poison as an antiseptic has been based on Koch's statement, in 1881, that a single application, for a few minutes, of a solution of the strength above specified would, without any previous preparation of the object to be disinfected, produce absolute disinfection of even the most resistant organism. This dictum has been corroborated by several bacteriologists.

Now Mr. McClintock, who seems to have conducted his experiments quite carefully, concludes that the high rank heretofore given corrosive sublimate as a germicide is without warrant and based on faulty experiments. These faults have been, in the main, two: enough of the sublimate was carried over with the disinfected material to act as an antiseptic; secondly, the sublimate formed with the investment of the germ an organic compound that, especially with the use of solid media, acted as an antiseptic, and the false conclusion was deduced that the germ was dead. Sublimate forms with cellulose (cloth, filter-paper, etc.), with silk, with albuminous bodies, and with some portions of bacteria (probably the envelope) a chemical compound that no amount of washing with water will remove. The capsule it forms about a germ not only protects the germ from the further action of the sublimate, but also forms an impenetrable barrier to the growth of the germ. The latter may be removed by salines, especially those in the blood. He also concludes that, while sublimate has no great germicidal power, it does not follow that it is not a valuable disinfectant, though it remains to be proved whether the germs contained in solutions treated with sublimate, and disposed of as such material usually is, do or do not grow.

These experiments justify the commendation that has been given in these columns of the employment of lye and solutions of quicklime as the best domestic antiseptic agents.

MINOR PARAGRAPHS.

MOTOR DISTURBANCES IN NEURASTHENIA.

Dr. Pitres, of Bordeaux, in the *Mercredi médical* for October 5th, calls attention to various motor disturbances in neurasthenia that facilitate the diagnosis, but are too often erroneously called hysterical. Tremor, the most important, exists in two thirds of all cases, and is identical with that of exophthalmic goître; fine, vibratory, and closely resembling the so-called alcoholic tremor. This tremor constitutes a sign of neurasthenia. Other motor troubles exist, though less frequently, such as cramps without apparent cause, attacks of muscular weakness, rhythmic spasms of the neck, tongue, and diaphragm, and constrictions of the œsophagus—all solely the expression of neurasthenia. Abasia may also be a symptom of neurasthenia in persons without any hysterical symptom whatever. The speedy occurrence of fatigue of the arms, out of all proportion to an effort made, and that brought about a momentary paralysis, has been noted in one instance; there was loss of the knee-jerk. When, added to this, Romberg's symptom is present, the condition is possibly one of pseudo-ataxia of the neurasthenic type. Eight times out of ten the author has found the pupils reacting well to light and refractory as regards accommodation, the reverse of the Argyll-Robertson symptom.

LEPROSY IN NEW SOUTH WALES.

According to the *British Medical Journal* for May 21st, a report just issued by the board of health of New South Wales states that the number of white lepers now under detention in the colony is eight, and that another has just died. Five of the patients were discovered during the course of the preceding year. In none of them was the disease recent, all without exception having had it for some years before their condition became known to the authorities. The law of 1890 of that colony warrants the detention of lepers and compels medical practitioners to report all cases they may meet with. Twenty years ago there were as many lepers in the colony as there are at present, and there is nothing to justify a fear that the disease is showing any increased activity.

THE DISTINCTION BETWEEN GUMMA AND TUBERCLE IN THE LUNGS.

Dr. Hodenpyl also presented at the same meeting a very interesting specimen of gumma and tubercle in a lung taken from a middle aged man. The other lung was normal. The man had presented the distinguishing symptoms of tubercle and gumma, which were enumerated as follows: In tubercle there is the history of tuberculosis; bacteriological examinations and inoculation experiments are usually positive; the tubercles are usually present in considerable numbers, scattered about the whole of an organ; the tubercles are usually small; they have a decided tendency to become cheesy and break down, forming cavities; they rarely undergo amyloid degeneration; on section, they are either round or irregular, grayish masses, often soft when recent, more or less cheesy at their centers, and surrounded by a zone of ordinary inflammatory products. In the case of gummata there is the history of syphilis; bacteriological examinations and inoculation experiments are negative; the granulomata are usually single or occur in small numbers and are generally confined to a single organ; the gummata may attain a considerable size; they regularly become cheesy, do not break down, but remain dry; on section, they are more or less distinctly spherical, and the larger portion of the nodule is in a condition of coagulation necrosis, rather dry, and not broken down, and they are surrounded by a zone of pearly-hued fibrous tissue and spheroidal cells.

THE BACTERIOLOGY OF MALIGNANT ULCERATIVE ENDOCARDITIS.

At a meeting of the New York Pathological Society held on Wednesday evening of this week Dr. Eugene Hodenpyl presented two specimens of infectious endocarditis. He stated that in the bacteriological examination in these cases he had found that the infectious organism was not always the same. In forty-three reported cases of the disease, the *Staphylococcus pyogenes albus* had been found twice, the *Staphylococcus pyogenes aureus* fourteen times, the *Streptococcus pyogenes* six times, the *Bacillus typhosus* once, the *Diplococcus pneumoniæ* six times, the tubercle bacillus once, and the *Bacillus fœtidus* three times, while in ten cases the variety of micro-organism had not been determined. Dr. T. Mitchell Prudden spoke of the desirability of making such examinations in all cases of the disease.

THE USE OF FLUORIDE OF SODIUM FOR DISTINGUISHING VITAL FROM CHEMICAL FERMENTATION.

M. Maurice Arthus and M. Adolphe Huber, in a paper in the *Archives de physiologie normale et pathologique* for October, state that in the study of fermentation the phenomena should be divided into two classes—fermentation caused by vital ferments, and that caused by chemical ferments. To distinguish the one from the other, filtration through porcelain that would retain the micro-organisms has been practiced, and various agents have also been employed to destroy the vital ferments. These authors have found that a one-per-cent. solution of fluoride of sodium kills all these living micro organisms. It prevents, therefore, the development of vital fermentation, though it does not influence chemical fermentation. It could be employed for determining the nature of fermentative phenomena that occur in the living organism, by distinguishing the vital from the chemical ferments.

RHUS RADICANS IN THE TREATMENT OF NOCTURNAL INCONTINENCE OF URINE IN CHILDREN.

The *Gazette médicale de Paris* for August 21st gives the following formula for a tincture of *Rhus radicans*, to be used in the treatment of nocturnal incontinence of urine in children: Rhus radicans (dry leaves), one part; alcohol (21°, Corlieu), five parts. Macerate for fifteen days. To children under six years of age five drops of this tincture may be given night and morning. For children over six as many as forty drops may be administered. An effect is soon produced. If at the end of three weeks there is no perceptible change, it is useless to continue using the tincture. When a cure is brought about, it is best to continue the administration of the drug from time to time.

THE EARLY DIAGNOSIS OF UTERINE CANCER.

Laroyenne (*Journal de médecine de Paris*, July 3, 1892) states that whenever the finger nail can bring away portions of the cervix or of the uterine mucosa it is perfectly safe to say the condition is one of epithelioma and no ordinary endometritis. This procedure is so simple and reliable that microscopic examination is practically unnecessary.

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending November 9, 1892:

DISEASES.	Week ending Nov. 1.		Week ending Nov. 9.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	0	0	0	0
Typhoid fever	26	11	30	10
Scarlet fever	56	6	84	7
Cerebro-spinal meningitis	0	0	2	0
Measles	43	7	57	7
Diphtheria	80	28	110	28
Small-pox	16	4	6	1

The Society of the Alumni of Bellevue Hospital.—At the last regular meeting of the society, on Wednesday evening, the 2d inst., Dr. J. M. Byron read a paper on Cholera in New York Harbor. The subject was discussed by Health Officer Jenkins, Dr. Hermann M. Biggs, and Dr. H. D. Chapin.

A Proposed Monument to Semmelweis.—The *Lancet* states that a meeting was held in the library of the Royal College of Physicians of London, under the chairmanship of Sir Andrew Clark, to devise means of joining with all admirers of Semmelweis in raising a monument to his memory in his native city, Budapest.

Trinity Hospital.—Dr. Arthur L. Fisk has been elected to the attending staff.

The New York Hospital.—Dr. Arthur L. Fisk has been appointed surgeon to the out-patient department in place of Dr. Charles A. Powers, resigned.

The New York Cancer Hospital.—Dr. Charles N. Dowd has been reappointed an assistant surgeon.

The late Dr. Frazer C. Fuller.—The following preambles and resolutions have been adopted by the medical board of the City Hospital:

Whereas, It has pleased Almighty God to call our late associate, Dr. Frazer C. Fuller, from his field of labor in the City Hospital; and

Whereas, Dr. Fuller exemplified in his professional career the faithfulness and zeal that gave bright promise of future usefulness and distinction;

Resolved, That we, his associates in the City Hospital, express our sense of bereavement at his death;

Resolved, That we tender our sympathy to his family in their great affliction;

Resolved, That these resolutions be spread upon a special page of the minutes, and that a copy be sent to the family of the deceased and to the medical journals of the city.

By the Committee { T. H. Allen,
Edward S. Peck,
J. Blake White.

The French Association for the Advancement of the Sciences.—L'Union médicale announces that the twenty-second session will be held next year in Besançon.

The Death of Professor Pietro Pellizzari, the renowned Florentine syphilographer, is recorded, with an appreciative sketch of his career, in *Lo Sperimentale* for October 15th.

Changes of Address.—Dr. George P. Biggs and Dr. Hermann M. Biggs, to No. 5 West Fifty-eighth Street.

Society Meetings for the Coming Week:

Monday, *November 14th:* New York Academy of Medicine (Section in General Surgery); New York Ophthalmological Society (private); New York Medico-historical Society (private); New York Academy of Sciences (Section in Chemistry and Technology); Lenox Medical and Surgical Society (private); Boston Society for Medical Improvement; Gynæcological Society of Boston; Burlington, Vt., Medical and Surgical Club (annual); Norwalk, Conn., Medical Society (private); Baltimore Medical Association.

Tuesday, *November 15th:* Southern Surgical and Gynæcological Association (first day—Louisville); New York Obstetrical Society (private); Medical Societies of the Counties of Kings and Westchester, N. Y.; Ogdensburgh Medical Association; Baltimore Academy of Medicine.

Wednesday, *November 16th:* Southern Surgical and Gynæcological Association (second day); Northwestern Medical and Surgical Society of New York (private); Medico-legal Society; Harlem Medical Association of the City of New York; New York Society for the Relief of Widows and Orphans of Medical Men (annual); New Jersey Academy of Medicine (Newark).

Thursday, *November 17th:* Southern Surgical and Gynæcological Association (third day); New York Academy of Medicine; Brooklyn Surgical Society; New Bedford, Mass., Society for Medical Improvement (private).

Friday, *November 18th:* Baltimore Clinical Society; Chicago Gynæcological Society.

Saturday, *November 19th:* Clinical Society of the New York Post-graduate Medical School and Hospital.

Letters to the Editor.

AN ELECTRICAL NOVELTY.

Mr. George Quarrie has an article in the *New York Medical Journal* for July 9, 1892, in which he expounds what he is "sanguine enough to consider a valuable discovery"—namely, "that civilized man is seriously damaged in health by wearing on his feet a covering in the *shape* of *prepared* leather, which more or less insulates his body from the earth."

We are to rate the importance of Mr. Quarrie's discovery in the light of the fact that it is by reason of this insulation, "principally, that he [civilized man] is so *notoriously inferior* to savages, or to people living in a semi-barbarous state, or to the lower animals, in powers of recuperation under bodily injury, as well as [inferior] in suffering from many diseases to which these others are total strangers."

Mr. Quarrie does not seem to have any doubt that the robust and rugged, rosy-cheeked and sturdy-limbed "barefooted little brats" of "Mrs. Buggins" are not like the "pale, puny, and sickly darlings" of "the lady from the hall" *because* they are *barefooted* little brats. For the same reason "Negroes and coolie laborers . . . are remarkable for their freedom from diseases to which the civilized are subject." "They have no toothache; they are never bald; their sight is remarkably clear and good, even in advanced age."

These are the points of "superiority," as specified by Mr. Quarrie. And, to complete his argument, he adds: "To attribute this superiority to a different *style* of food, *etc.*, is simply absurd, for," etc.

Of course, Mr. Quarrie's "etc." stands for *any other cause, or combination of causes.* He clinches his conclusions by citing facts "from personal observation *during two years*' [!] life right among such people in the West Indies."

After speaking in deprecation of our "continual interference with *Nature's electrical provisions in our feet*," he continues:

"I ask any man, before he decides this question for himself, to consider for a moment the wonderful construction of his own *feet soles.* Why are they provided by the Creator with that marvelous cluster of cutaneous nerve endings which *so distinguishes them from any other part of his body?* Why have we here those myriads of little *nerve feelers brought right out into the papillæ of the skin, so that, if free to do so, they would have actual contact with the earth as we walk upon it?* Was that provision made in vain? We must acknowledge that, if so, it is certainly the *first* of Nature's provisions which can be *called so.* Now, the latest *advances of science* on every side *concede* the fact that the nervous system is, to all intents and purposes, *the* electrical system. I therefore contend that our feet soles were designed to act [serve] as an electrical highway between our bodies and Mother Earth, and that the maintaining [of] that highway in a *free and unimpeded* state is a matter of vital importance, not only to man himself, but to all other animals on earth."

The Italics in all the preceding quotations, excepting the word *first*, are ours, so signalized in order to attract the reader's especial attention to both the form and the substance of the language. A little careful consideration of these will enable any reader of ordinary intelligence and of a moderate knowledge of scientific methods to fix the value of Mr. Quarrie's facts, arguments, and "discovery." Nevertheless, we may remind Mr. Quarrie that we have no "feet soles," and that the soles of our feet are not so remarkably distinguished in this respect from any other part of our body as he seems to suppose. The "nervous papillæ" of the palmar surface of the hands and fingers are more than four times as numerous as on the plantar surface of the feet. And of the four hundred papillæ in a square surface of a little more than one twelfth of an inch on the third phalanx of the index finger, only one hundred and eight are *nervous*—"nerve feelers," as Mr. Quarrie calls them. To the same area on the great toe, in a corresponding locality, there are only thirty-four tactile corpuscles—*nervous* papillæ—and "seven or eight in the skin on the middle of the surface of the feet." (Flint's *Physiology*, p. 514.)

Mr. Quarrie says that these "nerve feelers" are "brought *right out into* the papillæ of the skin, so that *if free to do so,* they would have actual contact with the earth as we walk on it." Unhappily for Mr. Quarrie's theory, and happily for suffering humanity, Nature has taken especial pains to prevent them from being "free to do so." She interposes a hard, horny substance (Landois's *Physiology*, p. 557) between them and the earth whenever the feet are exposed to continued contact with it, augmenting the thickness according to the exposure. And besides, this horny substance (the thickened epidermis) is one of the most non-conductive of all the animal tissues, rating with hair, wool, and nails (finger) as non-conductors of electricity. There is no part of the body where, even at birth, this hard nerve-shield is so thick as on the soles of the feet. Whatever benefits may accrue to "Mrs. Buggins's brats," from going barefoot, they are certainly not to be accounted for on Mr. Quarrie's theory, "that our feet soles were [are] designed to *act* [serve] as an electrical highway between our bodies and Mother Earth."

From the tenor of the first part of Mr. Quarrie's article, we were inclined to take all or nearly all the ills that flesh is heir to as the result of man's mistake in "wearing on his feet a covering in the shape of prepared leather"; but it turns out that the feet, eyes, and teeth are the immediate and principal sufferers from this "violation of Nature's laws." Mr. Quarrie's remedy is an ordinary shoe "with an insole of good conducting material, with very fine wires invisibly fixed, so as to afford perfect electrical communication between this insole and the earth; so that a man in his ordinary foot-wear is caused, in an electrical sense, *to literally* [literally to] walk barefooted on the ground, as he ought to *do* [walk]."

Mr. Quarrie is certainly proceeding on legitimate lines in challenging his readers to repeat his experiments; but he is clearly unsuccessful in his attempt to support them by his physiologico-electrical arguments. And, so far as his personal experience is concerned, he can not expect much weight to be attached to that, "while," as he himself says, "so much remains of uncertainty as to cause and effect in the nervous system."

There can be no question that a healthy condition of the feet is a *sine qua non* to general good health. And that the perfect ventilation, and the free evaporation of the perspiration, incident to the feet of "Mrs. Buggins's barefooted brats," point to the indispensable conditions of a truly hygienic shoe, there can be as little doubt—at least in the minds of those who have worn shoes constructed on such a principle.

R. C. RUTHERFORD.

Book Notices.

A Handbook of Hygiene and Sanitary Science. By GEORGE WILSON, M. A., M. D., F. R. S. Edin., Fellow of the Sanitary Institute of Great Britain, etc. Seventh Edition. Philadelphia: P. Blakiston, Son, & Co., 1892. Pp. xxxvi to 751. [Price, $3.25.]

WHILE this is called a new edition, it is virtually a new work, for the author has rewritten a large portion of it, increasing the size of the book by more than two hundred pages, and many new illustrations have been incorporated in the text.

The first chapter reviews the history of sanitary science in England up to the present time, and no more speaking record exists than that that shows a reduction in the mean annual mortality per mille from 22·6 in the decade 1862–'71 to 17·9 in 1889.

The chapter on food departs from the traditional disquisition on the dietaries of public institutions, a matter that is not closely related to hygiene, and is mostly devoted to an excellent review of the diseases that render the flesh of animals unfit for human food, of the effects of insufficient or unwholesome food on public health, and of the methods of examining food.

The chapter on air and its impurities, and their effects on public health, includes the causation of infectious diseases both by overcrowding and by sewer gas. That the latter may resume its waning importance, not only as a debilitating factor but as the bearer of the specific organisms of disease, is in part shown by recent observations that these organisms are expired by the patient; and, if that is the case, it would certainly be possible for the sewer gas to be a disseminating agent.

The chapters on ventilation and warming treat of the amount of fresh air required, of the necessary cubic space, of natural and artificial ventilation, of warming, and of lighting. The general use of electric lighting is welcomed for the sanitary advantages it offers. The methods of examining the air chemically, microscopically, and bacteriologically are clearly defined.

We believe that it is but a question of time when the subject of meteorology will be omitted from text-books on hygiene, as it is in most countries becoming a distinct and separate science, and its place will be filled with a consideration of climate in relation to health. Atmosphere, humidity, rainfall, and winds are matters that are beyond the scope of human interference, and the daily weather reports inform both our patients and ourselves regarding these points. But what we may desire to know is, to what locality we can best translate a patient affected by some of these factors in the locality in which he resides.

The chapters on water, water analysis, and the effects of impure water on public health are well and clearly written, the author still placing great weight on the value of a thorough chemical examination.

We note with some surprise in the chapter on the removal of sewage and house refuse the mention of the valve closet, that, even with a siphon trap, should be relegated to the museum of discarded appliances. The various plans for sewage precipitation are touched upon, as well as those for sewage filtration. In the use of sewage for irrigation the author considers that the soil can only become waterlogged in consequence of faulty engineering. The author thinks that sanitary reformers are too apt to forget that rivers and streams are the natural drainage outfalls of a country, and no hard and-fast rule can be made regarding the pollution of streams that may serve as sources of water-supply.

In the brief chapter on the influence of soils and localities on public health the author gives Dr. Bowditch credit for priority in establishing the relation of phthisis to dampness of the soil, though stating that the credit for the knowledge of the fact in England is due to Dr. Buchanan.

The chapters on dwellings and hospitals consider the question of selection of a site, that of sanitary defects and their remedy, and the general questions relating to these topics.

In the chapter on the zymotic diseases, cholera, yellow fever, influenza, and pneumonia; the septic diseases, so called; and diseases common to man and animals, the author has followed the old custom of arrangement, though his text follows the newest teaching in these subjects.

In the chapter on prevention and disinfection the author expresses his belief in quarantine in a restricted sense. In the list of disinfectants we note the omission of such domestic articles as quicklime and potash lye.

The brief chapter on the disposal of the dead very truly states that earth-burial has not been productive of well-authenticated outbreaks of specific disease. This is true because the micro-organisms of such a disease are destroyed during the putrefactive processes that follow inhumation.

The chapter on vital statistics gives the methods for determining death-rates and morbidity rates, as well as those for computing expectation of life.

The chapter on sanitary law and official duties deals largely with the English sanitary legislation, though much of it may serve as suggestions for framing a code in a district in which there is none.

There is an appendix containing data, formulæ, problems, and examination questions that will prove useful to the student.

While the work does not quite approach what would be a good handbook on hygiene for an American student, because it is written from an essentially English standpoint, still we know of no American work that is better, and the volume can not fail to be useful to any student that masters its teachings.

A Manual of the Operations of Surgery for the Use of Senior Students, House Surgeons, and Junior Practitioners. Illustrated. By Joseph Bell, M. D., F. R. C. S. Edin., Consulting Surgeon to the Royal Infirmary, etc. Seventh Edition, revised and enlarged. Edinburgh: Oliver & Boyd, 1892. Pp. xvi to 360.

The author has kept this volume fairly abreast of the surgical literature of the day, his first chapter, on the ligation of arteries, referring to the recently published work of Ballance and Edmunds on that subject.

The chapter on operations on the cranium and the scalp should include craniectomy both for neoplasms and for microcephalia. The reference in this chapter to "trephining of the spine" is apt to be misleading, for no surgeon to-day uses a trephine in performing laminectomy, and that operation is sufficiently important to be properly described.

The chapter on operations on the eye has been rewritten by Mr. W. G. Sym.

In the section on the radical cure of inguinal hernia, Wood's, Barker's, Macewen's, Ball's, and Banks's operations are described. The chapters on the operations on the abdominal viscera are, in general, comprehensive. Suprapubic lithotomy is commended, but the advantages of suprapubic cystotomy for prostatectomy, an operation not mentioned in the book, and for vesical exploration, are not referred to.

To anyone possessing familiarity with operative procedures in general this work may be useful for reference, but the compression necessary to get as much matter as possible into a volume of moderate size is not always advantageous for the extended narration of the steps of an operation that is so essential for a student's purpose. In general, however, most of the operations he will be called upon to perform are described with sufficient detail for his guidance, and the work is as good as any similar one with which we are acquainted.

A Treatise on Diseases of the Nose and Throat, in Two Volumes. By Francke Huntington Bosworth, A. M., M. D., Professor of Diseases of the Throat in the Bellevue Hospital Medical College, New York, etc. Vol. II—Diseases of the Throat. With 3 Colored Plates and 125 Woodcuts. New York: William Wood & Co., 1892. Pp. xiv–3 to 832.

The second volume of this valuable work appears two years and a half after the first and with a different lettering on its back. The same general care in its preparation and the same excellence of arrangement are apparent throughout its pages. The author has found time in a busy professional career to search the literature of his subject thoroughly, and produce a voluminous work which is a credit to both his industry and his knowledge. The present volume is divided into three sections. The first, treating of diseases of the fauces, embraces all those diseases affecting the oro-pharynx, the soft palate, the faucial pillars, and the tonsils. The author has attempted to rid the work of a confusing nomenclature which has crept into the literature upon this subject by adopting such terms "as in themselves both describe and locate the morbid process." While this is commendable, at the same time it would have rendered the book more useful as a work of reference had he given, both in the text and in the index, the various names used by other authors for the diseases which he has described. That portion of the text devoted to the anatomy is clear and concise, but the illustrations are more delineating than anatomically correct. Much space is devoted throughout the work to particular formulas for treatment which the author has found in his large experience to be especially useful.

The second section is devoted to diseases of the larynx. This is by far the most complete and acceptable portion of this volume. The chapters upon the anatomy and physiology are particularly full. The section in which he discusses the singing voice is exceedingly interesting, and will be referred to frequently by those interested in vocalization.

The third section, upon the external surgery of the throat, is far from satisfactory. It embraces all those operations which are necessary for opening the pharynx, larynx, and trachea by cutaneous incision. It is true that such operations usually come under the hands of the general surgeon, instead of the laryngologist's, and a full consideration of the subject would have enlarged this volume to undue proportions. Nevertheless, this section of the work seems to have been curtailed beyond what its importance demands. The woodcuts are not in keeping with the general make-up of the book.

As a whole, the two volumes of this work will be a treasure to specialists and will enhance the already enviable reputation of their author.

Materia Medica and Therapeutics. A Manual for Students and Practitioners. By L. F. Warner, M. D., Attending Physician, St. Bartholomew's Dispensary, New York. Series edited by Bern B. Gallaudet, M. D., Demonstrator of Anatomy, College of Physicians and Surgeons, New York. Philadelphia: Lea Brothers & Co., 1892. Pp. 8–17 to 223. [*The Students' Quiz Series.*]

This volume is intended principally for the use of medical students, and, if properly used to review the subject after reading the larger text-books, it will prove invaluable. The author is deserving of great credit for the clear and concise manner in which it is written. The order of taking up the physiological action is as good as in any of the American works, but inferior to that exemplified in some of the English, which follows the drug in its course through the system, beginning with the gastro-intestinal tract. It is founded on the writer's most excellent notes of Professor Peabody's lectures, and will be popular among the students at the College of Physicians and Surgeons.

Pulmonary Consumption, a Nervous Disease. By Thomas J. Mays, M. D., Professor of Diseases of the Chest in the Philadelphia Polyclinic and College for Graduates in Medicine, etc. Detroit: George S. Davis.

Dr. Mays believes that pulmonary consumption is not a local but a constitutional disease; that it consists in an exhausted state of the nervous system in general and of the vagus nerve in particular.

The presence of the tubercle bacillus is not denied, but he does deny its agency in producing the disease.

Dr. Mays gives many detailed observations in support of his theory and develops his conclusions in his usual clear and convincing style. While many may not accept his reasoning, no one will call the book dull or regret the time spent in its perusal.

BOOKS, ETC., RECEIVED.

Inoculation a Preventive of Swine Plague, with the Demonstration that the Administration of the Agricultural Department is a Public Scandal. An Exposure by Frank S. Billings, M. D., Director of the Patho-biological Laboratory of the State University of Nebraska. Printed and published at the expense of the author. Pp. 7–9 to 321.

An American Text-book of Surgery, for Practitioners and Students. By Charles H. Burnett, M. D., Phineas S. Conner, M. D., Frederic S. Dennis, M. D., William W. Keen, M. D., Charles B. Nancrede, M. D., Roswell Park, M. D., Lewis S. Pilcher, M. D., Nicholas Senn, M. D., Francis J. Shepherd, M. D., Lewis A. Stimson, M. D., William Thomson, M. D., J. Collins Warren, M. D., and J. William White, M. D. Edited by William W. Keen, M. D., LL. D., and J. William White, M. D., Ph. D. Profusely illustrated. Philadelphia: W. B. Saunders, 1892. Pp. xx to 1209.

Diseases of the Eye. A Hand-book of Ophthalmic Practice, for Students and Practitioners. By G. E. de Schweinitz, M. D., Professor of Diseases of the Eye in the Philadelphia Polyclinic; Lecturer on Medical Ophthalmoscopy in the University of Pennsylvania, etc. With Two Hundred and Sixteen Illustrations and Two Chromo-lithographic Plates. Philadelphia: W. B. Saunders, 1892. Pp. xii–17 to 641.

A Clinical Text-book of Medical Diagnosis for Physicians and Students, based on the most Recent Methods of Examination. By Oswald Vierordt, M. D., Professor of Medicine at the University of Heidelberg, etc. Authorized Translation from the Second Improved and Enlarged German Edition, with Additions. By Francis H. Stuart, A. M., M. D., Member of the Medical Society of the County of Kings, New York, etc. Second Edition, revised. With One Hundred and Seventy-eight Illustrations, many of which are in Color. Philadelphia: W. B. Saunders, 1892. Pp. xv–17 to 700.

Essentials of Diagnosis, arranged in the Form of Questions and Answers; prepared especially for Students of Medicine. By Solomon Solis-Cohen, M. D., Professor of Clinical Medicine and Applied Therapeutics in the Philadelphia Polyclinic; and Augustus A. Eshner, M. D., Instructor in Clinical Medicine in Jefferson Medical College. With Fifty-five Illustrations, some of which are colored, and a Frontispiece. Philadelphia: W. B. Saunders, 1892. Pp. xix–17 to 382. [*Saunders's Question Compends*, No. 17.]

The Mastoid Operation, including its History, Anatomy, and Pathology. By Samuel Ellsworth Allen, M. D. Cincinnati: Robert Clarke & Co., 1892. Pp. vii to 111.

Household Nursing. By John Ogle Tunstall, M. D. Lond., Member of the Royal College of Surgeons of England, etc. London: T. Fisher Unwin, 1892. Pp. 8–9 to 116.

Practice of Medicine. A Manual for Students and Practitioners. By Edwin T. Doubleday, M. D., Attending Physician, New York Hospital, Out-patient Department; and J. Darwin Nagel, M. D., Adjunct to the Department of Nervous Diseases of the New York Polyclinic. Series edited by Bern B. Gallaudet, M. D., Demonstrator of Anatomy, College of Physicians and Surgeons, New York. Philadelphia: Lea Brothers & Co., 1892. Pp. 8–17 to 221. [*The Students' Quiz Series.*]

Gynæcology. A Manual for Students and Practitioners. By G. W. Bratenahl, M. D., Assistant in Gynæcology, Vanderbilt Clinic, New York, and Sinclair Tousey, M. D., Assistant Surgeon, Out-patient Department, Roosevelt Hospital, New York. Series edited by Bern B. Gallaudet, M. D., Demonstrator of Anatomy, College of Physicians and Surgeons, New York. Philadelphia: Lea Brothers & Co., 1892. Pp. 6–17 to 211. [*The Students' Quiz Series.*]

On an Epidemic Skin Disease, resembling Eczema and Pityriasis Rubra in some Respects, which occurred chiefly in the Western District of London during the Summer and Autumn of 1891. A Paper originally read before the Medical Society of London, November 30, 1891, and reprinted from the British Journal of Dermatology for February and March, 1892, with Corrections, Additions, and Numerous Illustrations. By Thomas D. Savill, M. D. Lond., D. P. H. Camb., etc. London: H. K. Lewis, 1892. Pp. 5 to 64.

Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Authors and Subjects. Vol. XIII. Sialagogues-Sutugin. Washington: Government Printing Office, 1892. Pp. 1005.

Physique du physiologiste et de l'étudiant en médecine. Actions moléculaires—acoustique—électricité. Par J. Bergonié, Professeur à la Faculté de médecine de Bordeaux. Paris: G. Masson, 1892. Pp. 5 to 180. [*Encyclopédie scientifique des aides-mémoire.*]

Du paludisme. Par le Docteur A. Laveran, médecin principal de première classe de l'armée. Paris: G. Masson, 1892. Pp. 7–9 to 184. [*Encyclopédie scientifique des aides-mémoire.*]

Épilepsie. Par Ch. Féré, médecin de Bicêtre. Paris: G. Masson, 1892. Pp. 4–5 to 203. [*Encyclopédie scientifique des aides-mémoire.*]

Examen des ailments suspects. Par H. Polin, médecin major de l'armée, et H. Labit, médecin major de l'armée. Avec une préface de M. le Professeur J. Arnould, médecin inspecteur de l'armée. Paris: G. Masson, 1892. Pp. 5 to 229. [*Encyclopédie scientifique des aides-mémoire.*]

Les acariens parasites. Par P. Mégnin, ancien vétérinaire de l'armée. Paris: G. Masson, 1892. Pp. 11–12 to 182. [*Encyclopédie scientifique des aides-mémoire.*]

Menstruation et fécundation. Physiologie et pathologie. Par A. Auvard, accoucheur des hôpitaux. Paris: G. Masson, 1892. Pp. 12–13 to 195. [*Encyclopédie scientifique des aides-mémoire.*]

Gonorrhœa and Urethritis. By G. Frank Lydston, M. D. Professor of the Surgical Diseases of the Genito-urinary System and Syphilology in the Chicago College of Physicians and Surgeons. Detroit: George S. Davis, 1892. Pp. 216. [*The Physician's Leisure Library.*]

Treatment of Sacculated Aortic Aneurysm by Electrolysis through Introduced Wire. By D. D. Stewart, M. D., Philadelphia. [Reprinted from the *American Journal of the Medical Sciences.*]

On the Value of a New Coca Base—Benzoyl, Ψ Tropeine (Tropacocaine)—as a Local Anæsthetic. By Arthur P. Chadbourne, M. D., Boston. [Reprinted from the *British Medical Journal.*]

Trephining for the Cure of Epilepsy. By Middleton Michel, M. D., Charleston, S. C. (Read before the Medical Association of the State of Alabama.)

A Few Practical Remarks upon the Commoner Affections of the Nose and Pharynx of Children. By E. Meierhof, M. D., New York. [Reprinted from the *Archives of Pædiatrics.*]

Three Cases of Extra-uterine Pregnancy—Ligation of Ureter. By George Erety Shoemaker, M. D. [Reprinted from the *Annals of Gynæcology and Pædiatry.*]

Recent Progress in Diseases of the Brain and Nervous System. By F. Robert Zeit, M. D., of Medford, Wisconsin. [Reprinted from the *Transactions of the State Medical Society.*]

Characteristics. By S. Weir Mitchell, M. D., LL. D. (Harvard). New York: The Century Co., 1892. Pp. 307.

Two Cases of Conservative Surgery. By F. Robert Zeit, M. D., of Medford, Wisconsin. [Reprinted from the *Transactions of the State Medical Society.*]

Trendelenburg's Posture in Gynæcology, with Demonstrations of a Convenient Apparatus for obtaining the same. By Florian Krug, M. D., of New York. [Reprinted from the *Annals of Gynæcology and Pædiatry.*]

A Gas-producing Bacillus (Bacillus aerogenes capsulatus, nov. spec.) capable of Rapid Development in the Blood-vessels after Death. By William H. Welch, M. D., and George H. F. Nuttall, M. D., Johns Hopkins University. [Reprinted from the *Johns Hopkins Hospital Bulletin.*]

A Manual of Medical Jurisprudence. By Alfred Swaine Taylor, M. D., F. R. S. Revised and edited by Thomas Stevenson, M. D. Lond., Fellow of the Royal College of Physicians, London, etc. Eleventh American, edited with Citations and Additions from the Twelfth English Edition. By Clark Bell, Esq., President of the American International Medico-legal Congress of 1893, etc. Philadelphia: Lea Brothers & Co., 1892. Pp. xvi–17 to 790.

Tuberculosis of Bones and Joints. By N. Senn, M. D., Ph. D., Chicago, Ill., Professor of Practice of Surgery and Clinical Surgery in Rush Medical College. Philadelphia and London: The F. A. Davis Co., 1892. Pp. xiii to 504.

Anæsthetics: their Uses and Administration. By Dudley Wilmot Buxton, M. D., B. S., Member of the Royal College of Physicians; Member of the Royal College of Surgeons of England, etc. Second Edition. Philadelphia: P. Blakiston, Son, & Co., 1892. Pp. xii to 222. [Price, $1.50.]

Memoranda on Poisons. By Thomas Hawkes Tanner, M. D., F. L. S. Seventh American from the Last London Edition. Revised by John J. Reese, M. D., Late Professor of Medical Jurisprudence and Toxicology in the University of Pennsylvania. Philadelphia: P. Blakiston, Son, & Co., 1892. Pp. 8–9 to 177. [Price, 75 cents.]

A Manual of Physics: Being an Introduction to the Study of Physical Science. Designed for the Use of University Students. By William Peddie, D. Sc., F. R. S. E., Assistant to the Professor of Natural Philosophy in the University of Edinburgh. New York: G. P. Putnam's Sons, 1892. Pp. xii to 501. [Price, $2.50.]

On the Chemistry and Therapeutics of Uric Acid Gravel and Gout. Being the Croonian Lectures for 1892 delivered before the Royal College of Physicians of London. With Additions by Sir William Roberts, M. D., F. R. S. London: Smith, Elder, & Co., 1892. Pp. vii to 136.

The Use of Iodine, Carbolic Acid, and Chloral in Dermatology. By Condict W. Cutler, M. S., M. D. [Reprinted from the *Journal of Cutaneous and Genito-urinary Diseases.*]

Combined Gynæcological Operations. By George M. Edebohls, A. M., M. D., New York. [Reprinted from the *American Journal of the Medical Sciences.*]

A Review of Forty-eight Cases of Abdominal Surgery. By Clinton Cushing, M. D., of San Francisco, Cal. [Reprinted from the *Annals of Gynæcology and Pædiatry.*]

Therapeutic Results of Direct Electrization of the Stomach. By Max Einhorn, M. D., New York. [Reprinted from the *Medical Record.*]

A Contribution to the Study of Cystic Kidney. By Ludvig Hektoen, M. D. [Reprinted from the *Chicago Medical Recorder.*]

Rupture of the Aortic Valves with Demonstration of Specimen. Aneurysms of Right Auricular Appendix. By Ludvig Hektoen, M. D. [Reprinted from the *North American Practitioner.*]

The Physiological Importance of the Proximate Principles and their Practical Utility in the Food-Stuffs and in the Nutritive Processes of the System. By William Henry Porter, M. D., New York. [Reprinted from the *American Journal of the Medical Sciences.*]

Embolism of the Right Coronary Artery: Sudden Death. By Ludvig Hektoen, M. D. [Reprinted from the *Medical News.*]

A Prescription of Exercise for Health and Grace. A Manual of Movements for Healthful and Harmonious Development. By Alfred I. Thayer, A. B., M. D., Newark, N. J.

Adenoid Vegetations of the Pharynx a Frequent Cause of Deafness in Children. Their Removal. By S. Latimer Phillips, M. D., Savannah, Ga. [Reprinted from the *Atlanta Medical and Surgical Journal.*]

A Case of Diphtheria in which the Membrane persisted for a Long Time, with Nephritis as a Sequence. By J. A. Hawkins, M. D., of Avalon, Pa. [Reprinted from the *Medical News.*]

Can Croupous Pneumonia be Aborted? By Thomas J. Mays, M. D., Philadelphia. [Reprinted from the *Medical News.*]

Hydronaphthol in the Prophylaxis and Treatment of Cholera: Report of Laboratory Experiments. By D. D. Stewart, M. D., Philadelphia. [Reprinted from the *Medical News.*]

A New Method for Direct Electrization of the Stomach. By Max Einhorn, M. D., New York. [Reprinted from the *Medical Record.*]

The Therapeutical Effect of Antikamnia. By Hugo Engel, M. D., Philadelphia. [Reprinted from the *Medical Summary.*]

Transactions of the Washington Obstetrical and Gynæcological Society. Volume III. June 7, 1889, to May 16, 1890.

New Inventions, etc.

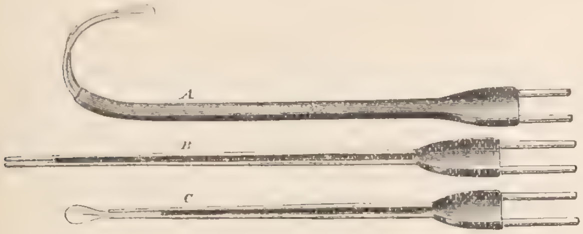
SOME GALVANO-CAUTERY ELECTRODES.

By Chevalier A. Jackson, M. D.,

PITTSBURGH, PA.

The cut shows some electrodes that have given me much satisfaction. They differ from the ordinary electrodes in the manner of their insulation, dispensing with the thread-winding and substituting hard rubber, "vulcanized on" to the conducting wires. Thread is objectionable for these reasons: When wet, as with secretions, it is not a good insulator; it collects blood, pus, and secretions, which can not be removed from its strands; its coils around the wires act as a rasp, often tearing and always more or less irritating the mucous membrane, especially when passed far back into the nasal fossæ through the anterior nares; it is always becoming cut or loosened; and, finally, it makes a bulky instrument. The new instruments here described are free from all these objections, and they are readily sterilized by chemical caustics or by immersion in boiling water.

In the cut, B represents a snare cannula and C an electrode. Instruments of half this size are well adapted to the most delicate ear or eye work, but care must be taken not to use too strong a current. For nose and throat work, extreme delicacy not being required, the rubber insulating material is "vulcanized on" all around the wires as at A. An electrode of the shape shown at A is used by the writer for the reduction of posterior hypertrophies of the turbinated bodies. The method consists simply in drawing forward the palate with a White self-retaining palate-hook (or with Wales's rubber cord), passing the electrode up behind the palate, and *properly* cauterizing the hypertrophy. The manipulation of the electrode is watched in the rhinal mirror, and the tongue is held out of the operator's way by the patient with a Chevalier Jackson tongue spatula. With an ordinary tongue depressor the operation loses much of its facility. If retching occurs, the spatula, electrode, and palate-hook should all be warmed; though, with the palate properly retracted, the operation may proceed regardless of the retching, if the patient be able to hold his head still.



The method is always effective; it matters not whether the hypertrophy is hard and fibrous in structure or soft and œdematous. In either case the blade of the cautery knife must be pressed closely in place before the circuit is closed, and a *very slight* to-and-fro motion given to the electrode as its blade sinks deeper and deeper into the tissues. When the platinum is felt to grate on the bone, it is still moved to and fro for a moment longer to insure the thorough singeing of the periosteum. This means a thorough application, and on thoroughness depends the success of the procedure; a superficial application is worse than useless. If the hypertrophy is very large, the cauterization may have to be repeated from one to three times at as many subsequent sittings, but as each sitting only requires an average of fifteen minutes, including cocainization, the procedure is economical in expenditure of the operator's time. While not advocating it as a substitute for the snare in all cases, the writer has, since devising the method, rarely resorted to the snare, cold or hot. The effect of the operation is to shrink and destroy much of the submucous tissues, connective and vascular, with a minimum of scar; and what cicatrix does result binds the tissues tightly down to the periosteum. If now the causes resulting in the production of the hypertrophy are removed, the growths do not recur. There is no need to waste space with detailed reports of cases; a trial of the method demonstrates its effectiveness. It has been used in forty-seven cases, with complete success in all; and in no instance has any ill result, such as middle-ear inflammation, followed.

In cases where we have those swellings of the tissues covering the vomer posteriorly to an extent deemed pathological, the only simple way of removal is in a manner similar to that just described for posterior hypertrophy of the turbinals.

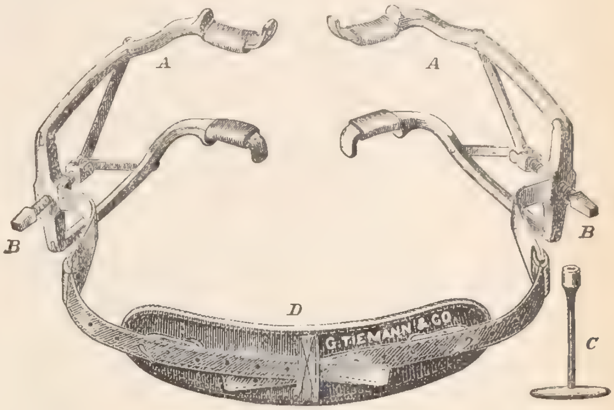
63 Sixth Avenue.

A SELF-RETAINING MOUTH GAG.

By Thomas J. Dunott, M. D.,

OPHTHALMIC AND VISITING SURGEON, HARRISBURG HOSPITAL, HARRISBURG, PA.

The need of a mouth gag which will retain its position under all circumstances connected with operations involving the roof of the mouth and the naso-pharyngeal space is urgent and as yet, it seems to me, has only been partially supplied. Repeatedly while operating I have been disappointed, when security of fixation of the instrument was most essential, because of its slipping from its position. In simple cases the various implements used are abundantly sufficient, but in cases requiring prolonged operative procedures nearly all of them are insecure, at least all I have used in my own practice or have seen used by other surgeons. None of the gags will remain in place if there is much struggling on the part of the patient, and, since partial anæsthesia is often essential, in order to have the aid of the patient in freeing the larynx from blood, if the gag slips at a critical moment it not only adds to the anxiety of the operator but also possibly may cause the death of the patient. Every gag with which I am familiar has its point of support in front. It occurred to me that if this was changed so as to have it posteriorly on the neck, it would be thoroughly secure and solve the question with regard to its retention.



On one occasion I witnessed an operation performed by Professor William White (holding the chair of surgery in the University of Pennsylvania) for the removal of a large and very vascular growth in the naso-pharynx. He was much annoyed by the constant slipping of the gag at critical moments, the patient being only partially under the influence of ether. At one time her appearance and condition were so alarming that the operator almost involuntarily said, "If any one would invent a mouth gag which would not slip, he would give to the patient and surgeon a great boon." This remark of Dr. White's is responsible for the mouth gag which has been made for me by Tiemann & Co., New York. The new feature being that it is supported in the way previously described, because of this adjustment it can not possibly slip from its position. Its mechanism is very simple, and, although it may in the future be improved so as to meet all the wants of the oral surgeon, I feel confident that as constructed it will be useful.

132 Walnut Street.

Miscellany.

The New York State Medical Association will hold its ninth annual meeting at the Mott Memorial Hall, in New York, on Tuesday, Wednesday, and Thursday, the 15th, 16th, and 17th inst., under the presidency of Dr. Judson B. Andrews. The programme gives the following titles: Pneumectomy for the Relief of Tubercular Abscess of the Lung Twice on the Same Patient: Recovery, by Dr. J. Blake White, of New York County; Traumatic Osteo-arthritic Lesions which Involve the Proximal Segment of the Ankle Joint, by Dr. Thomas H. Manley, of New York County; Muscular Traction for Hip-joint Disease, by Dr. T. M. Ludlow Chrystie, of New York County; Ectopic Pregnancy, by Dr. Henry D. Ingraham, of Erie County; The Treatment often found Necessary after Trachelorrhaphy for the Purpose of restoring the Uterus to its Normal Condition, by Dr. William H. Robb, of Montgomery County; The Palliative Treatment of such Cases of Cancer of the Uterus and its Annexa as are not Amenable to Radical Operative Measures, by Dr. J. E. Janvrin, of New York County; Antiseptic Vaginal and Intra-uterine Injections Unnecessary, if not Injurious, in the Daily Practice of Midwifery, by Dr. Darwin Colvin, of Wayne County;

The Question of Drainage in Pelvic and Abdominal Surgery, by Dr. C. C. Frederick, of Erie County: A Case of Puerperal Eclampsia at the Seventh Month, with a Few Thoughts as to Treatment, from Practical Experience, by Dr. Douglas Ayres, of Montgomery County; The Ætiological Factors of a General Character Potent in the Production of Diseases Peculiar to Women, by Dr. George T. Harrison, of New York County; Abortion and Manslaughter, by Dr. F. W. Higgins, of Cortlandt County; Pelvic Version, by Dr. T. J. McGillicuddy, of New York County; Abdominal Hysterectomy for Myoma, by Dr. Frederick A. Baldwin, of New York County; Tumors of the Orbit and Adjacent Cavities, by Dr. Charles S. Bull, of New York County; Eclecticism in the Treatment of Cataract, by Dr. Alvin A. Hubbell, of Erie County; The Treatment of Neglected Cases of Rotary Lateral Curvature of the Spine, by Dr. Reginald H. Sayre, of New York County; A Review of Some of the Injuries of the Upper Extremities, by Dr. E. M. Moore, of Monroe County; The Mental Symptoms of Fatigue, by Dr. Edward Cowles, of Somerville, Mass.; Paraplegia, by Dr. Charles W. Brown, of Washington, D. C.; Acute Pleurisy, by Dr. Frank S. Parsons, of Northampton, Mass.; The Question of Maternal Impressions, by Dr. H. S. Williams, of New York County; A Clinico-pathological Study of Injuries of the Head, with Special Reference to Lesions of the Brain Substance, by Dr. Charles Phelps, of New York County; Personal Experiences and Conclusions in the Domain of Brain Surgery, by Dr. Roswell Park, of Erie County; A Plea for the Early Extirpation of Tumors, by Dr. John W. S. Gouley, of New York County; Fractures of the Neck of the Femur in the Aged, by Dr. Stephen Smith, of New York County; Fractures of the Patella treated by Continuous Extension, Patients not confined to Bed, by Dr. Joseph D. Bryant, of New York County; Some Recent Cases of Appendicitis, by Dr. Nathan Jacobson, of Onondaga County; A Report of Some Cases of Compound Depressed Fracture of the Skull, by Dr. George D. Kahlo, of Indiana; The Achievements of American Surgery, by Dr. Frederic S. Dennis, of New York County; A Few Facts and Fancies (Early Aspiration in Pleurisy; Mineral Waters, Crude and Refined; Coughing made easy in Bronchiectasis; The Craftiness of the Insurance Sponge), by Dr. Henry D. Didama, of Onondaga County; The Ætiology of Gastric Ulcer, by Dr. Charles G. Stockton, of Erie County; The Examination and Commitment of the Insane in New York County, by Dr. Matthew D. Field, of New York County; Mitral Stenosis in Pregnancy, with Report of Cases, by Dr. Zera J. Lusk, of Wyoming County; The Use of Electricity in Midwifery, by Dr. Ogden C. Ludlow, of New York County; A Résumé of our Present Knowledge of Microbes in Disease, by Dr. Nelson B. Sizer, of Kings County; Winter Cholera in Poughkeepsie, by Dr. James G. Porteous, of Dutchess County; Discussion on the Prophylaxis and Treatment of Cholera, by Dr. Alfred L. Carroll and Dr. Joseph D. Bryant, of New York County; Suggestions relating to Improvement of the Quarantine System, by Dr. Stephen Smith, of New York County; The Limit of Responsibility in the Insane, by Dr. John Shrady, of New York County; Some Personal Observations upon the Treatment of Alcoholism, and the Known Effects of Alcoholic Abuse upon Posterity, by Dr. H. Ernst Schmid, of Westchester County; Climatology in its Relation to Disease, by Dr. S. J. Murray, of New York County; The Therapeusis of Pyrexia, by Dr. S. T. Armstrong, of New York County; Brief Comments on Materia Medica, Pharmacy, and Therapeutics, by Dr. Edward H. Squibb, of Kings County; Dermic and Hypodermic Therapeutics, by Dr. S. F. Rogers, of Rensselaer County; and Some Recent Experience in Renal Surgery, by Dr. E. D. Ferguson, of Rensselaer County.

The American Microscopical Society.—At the fifteenth annual meeting, held on August 9th, 10th, 11th, and 12th, in Rochester, N. Y., besides the annual address, by Professor M. D. Ewell, on Some Relations of the Microscope and Jurisprudence, the following papers were read: Dr. G. M. Sternberg, Photomicrographs by Gas Light, illustrated by Lantern Slides; Dr. A. Clifford Mercer, Photomicrographs and Photomicrographical Apparatus, also illustrated; Mr. Clark Bell, Blood and Blood Stains; Professor M. D. Ewell, on Numerical Aperture, on The Concave Mirror, on The Microscopic Identification of Ink, and on A Metrical Examination of 1,000 Signatures of the Same Persons; Dr. M. L. Holbrook, The Structure of the Red Blood-Corpuscles of Man; Professor S. H. Gage, Methods of Decalcification in which the Structural Elements are preserved; and An Aqueous Solution of Hæmatoxylon which does not readily Deteriorate; Dr. W. C. Krauss, The Diagnosis of Tumors; Dr. Lester Curtis, Bacteria in Healthy Human Blood; Professor D. S. Kellicott, A Crustaceous Parasite of the Miller's Thumb; Mr. Frank Zentmayer, A New Form of Continental Microscope; Professor W A. Rogers, A Few Words about Filar Micrometers; and The Use of the Microscope in the Workshop; Dr. R. G. Nunn, Scavengers of the Blood; Mr. G. W. Rafter, The Microscopical Examination of Potable Water; Professor E. W. Claypole, On some Cheap Microscopes and their Value to the General Student; Dr. Thomas D. Biscoe, The Wenham Binocular—Can it be made Adjustable to a Variable Tube Length? Mr. W. N. Preston, On a New Mounting Table, and a Practical Drying Oven; Mr. James H. Logan, Precious Stones as Microscopic Objectives; Mr. G. S. Hopkins, Contributions on the Digestive Tract of some Ganoids; Dr. L. H. Howe, A Point in the Microscopical Anatomy of the Eye, with Sections; Mrs. S. H. Gage, A Model constructed from Serial Sections; Mr. E. H. Griffith, A New Substage Diaphragm, etc.; and Mr. W. W. Rowlee, Buds in the Leaf of *Bryophyllum calycinum*. The next meeting will be held in Madison, Wisconsin, beginning on the third Thursday in August, 1893.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and n new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

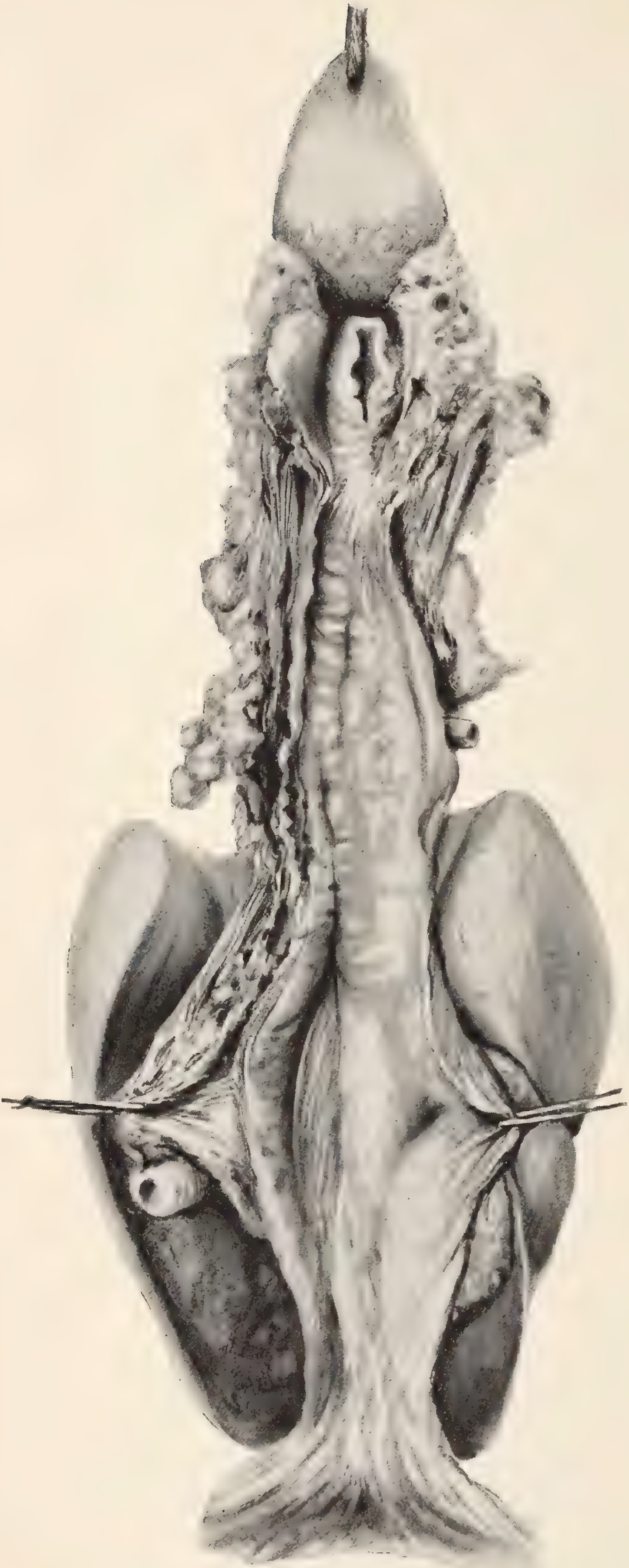


FIG. 1.

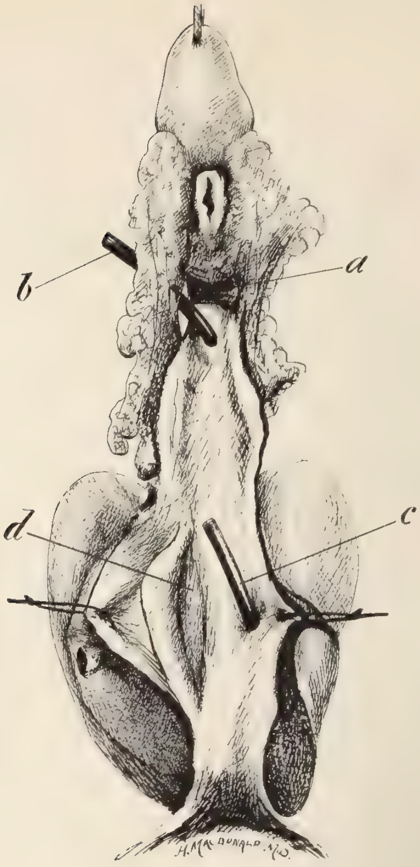


FIG. 2.

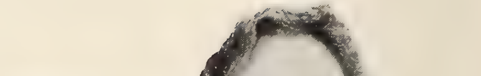


FIG. 3.

THE NEW YORK MEDICAL JOURNAL, November 19, 1892.

Original Communications.

EXTERNAL ŒSOPHAGOTOMY
IN THE OPERATIVE TREATMENT OF CICATRICIAL STRICTURE OF THE ŒSOPHAGUS.

*With a Proposition for improving the Method of performing Internal Œsophagotomy.**

By WILLY MEYER, M. D.,
PROFESSOR OF SURGERY TO
THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL;
ATTENDING SURGEON TO
THE GERMAN AND NEW YORK SKIN AND CANCER HOSPITALS.

In spite of the immense progress of modern surgical technique and improved operative methods, ably assisted by the antiseptic treatment, the permanent cure of a narrow or impermeable cicatricial stricture of the œsophagus is still one of the most difficult tasks of the surgeon. This will be especially found in children, who naturally look at the doctor who attempts with them any bodily manipulation as their torturer, and therefore struggle with all their might against every effort at dilatation of the obstructed canal by the bougie.

Two chief methods are applied in the operative treatment of this serious trouble:

1. External œsophagotomy at the spot usually selected for this operation, with consecutive instrumental dilatation from this wound with either bougie or knife, generally with both.

2. Retrograde divulsion, with the help of preliminary gastrostomy.

Before endeavoring to bring out and compare the value and advantages of each of these two methods, I want to state first, as briefly as possible, the history of a case of this kind which recently came under my observation and treatment:

E. B., of Montreal, aged two years and nine months, is the third child of healthy parents. In October, 1890, while being unwatched for a moment, she swallowed some caustic lye which was used by the housemaid for cleansing and polishing the bathtub. The doctor who was immediately sent for ordered a dose of sweet oil, which promptly produced a strong vomiting spell. As far as could be seen, mouth and throat were badly burned, and it could be inferred that the œsophageal canal had suffered also. The little patient was unable to swallow even fluids until two days after the accident. After a week she also partook of a semi-solid diet. From now on everything went well. The child seemed in apparent health until December, 1890, six weeks after the accident. Then she complained of pain and difficulty in swallowing solid food. Soon all the symptoms of a progressive stricture of the œsophagus were noticed. The doctor who was consulted about it was opposed to local treatment as long as deglutition was possible. But when he tried, after a lapse of six more weeks, to push a sound into the stomach he did not succeed. From this time on the child passed through the hands of a number of specialists at Montreal and Toronto, to which latter city the parents moved about that time. It was noted by all of these gentlemen that there was a stricture right behind the cricoid cartilage, and a second obstruction lower down, commencing at a spot which corresponded about to the bifurcation of the trachea. Now and then this latter one was overcome, but the bougie apparently never entered the stomach. Whenever it seemed to pass farther down, the child suddenly became very restless and cyanotic, with long-drawn-out croupous inspirations, and vomited. The same symptoms usually appeared about eight to ten days after the last sounding, which was generally done every twelve days, and were sometimes accompanied by rise of temperature. Then the little sufferer pushed all the five fingers into her mouth, and instinctively tickled the soft palate until she vomited. For the last three months the diet had been entirely fluid. Already in the early summer the doctors had advised an operation, but the parents, unhappily, were opposed to such a treatment, and only saw the absolute necessity of a more heroic interference when the child had nearly died in one of the attacks above described.

When I saw the child at my office, September 9, 1891, it was thin, pale, restless, and slightly cyanotic. When she cried, the inspiration at once became croupous. I abstained from testing the caliber of the œsophagus at this time, deeming it best to do that once thoroughly under an anæsthetic. Mother and child were admitted to the German Hospital. There fluid diet was partaken of. Small quantities seemed to find no special difficulty in their descent to the stomach. Weight, twenty-three pounds. Four days later fever set in; no food was or could be taken. On careful general examination, an apparent organic cause for the rise of temperature could not be found. Dr. A. Jacobi, who at this time saw the patient with me, was likewise unable to diagnosticate any disease. Immediate sounding of the œsophagus in narcosis was therefore decided upon. Temperature, 102° F. After the first whiff of chloroform the face turned blue; a few sounding inspirations, with spasm of the lower jaw and grinding teeth, followed, and respiration stopped. Immediate lowering of the head and extraction of the tongue were resorted to. No relief followed. Tracheotomy was just going to be performed when my finger, which I had pushed far down over the base of the tongue in order to give the air free access to the larynx, suddenly produced vomiting. At the same moment respiration started up again. Quite a time elapsed before the vomiting of mucus and partially curdled milk ceased. Then the former cyanotic condition disappeared; respiration was entirely free; the examination could be performed. A medium-sized whalebone bougie (*bougie à boule*) met with a stricture right behind the cricoid cartilage. By some slight pressure it was overcome. Two inches and a half lower down the sound was again stopped. After some manipulation, which again induced impeded crowing inspirations and cyanosis, I succeeded in making the bougie enter the stricture for about two inches, but then it was firmly caught. The same result was experienced with thinner bougies. I did not venture to enforce any further progress downward, out of fear of perforating the wall of the œsophagus. Repeated attempts to reach the stomach were made with different sized and shaped bougies on subsequent days without anæsthesia, but likewise failed. Operative interference was clearly indicated. But which operation was the most preferable? In view of the superior stricture, which was directly accessible to the knife, I decided to perform external œsophagotomy.

On account of my absence from the city about that time, the operation had to be deferred until September 30th. Chloroform narcosis was induced, preceded by a hypodermic of three minims of morpho-atropine. This time there was no trouble with the respiration. The incision, about two inches long, split the superior stricture. It was seen that it was caused by a thin, circular, cicatricial, spur-like band, which narrowed the lumen to the size of a lead-pencil. The spur was highest on the side opposite the incision. Thus the canal made a sharp curve at that spot, the convexity pointing to the left. This spur was divided with the scissors transversely at two spots, and the small wounds were united longitudinally with a few interrupted catgut stitches, thus imitating the Heineke-Miculicz method used in pyloroplasty. I now pushed a conical bougie (No. 11 of the French gauge) down toward the stomach, and succeeded in the first attempt, by using some slight pressure, in entering that organ. Bougie No. 12, or a soft-rubber catheter (Nélaton) of this size, encountered insuperable resistance. As a French conical catheter was not at hand, the bougie No. 11 was left in place. After proper disinfection of the wound, narrow strips of iodoform gauze were put into the depth of the wound at both sides of the œsophagus, and its cut surfaces united with those of the skin with a number of catgut sutures. Rectal alimentation was employed. On the following day the child was doing well; the bougie was exchanged for a catheter (No. 13), and feeding was started from above. Small quantities of water were allowed by the mouth to quench the dry feeling in the throat, but, of course, they appeared at once, as also did the saliva, at the opening in the neck. After three weeks of gradual dilatation. always easily done from the wound in the neck, a Nélaton catheter (No. 26), with a distal opening, passed the stricture. Only the larger sizes, from No. 23 upward, had met with some difficulty—more so whenever the child screamed and resisted. On October 21st the wound had healed, a good lip fistula had been established, and the child had for some time been out of bed.

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* Read before the New York Surgical Society, March 9, 1892. (For discussion, see *N. Y. Med. Jour.*, July 2, 1892, Proceedings of New York Surgical Society.)

The subsequent history is of some interest and importance. I will therefore state the different points as briefly as possible, quoting from the history:

October 21st.—No. 27 bougie and catheter refused to pass, probably on account of the struggling of the child. Therefore morphine-chloroform narcosis. Recumbent posture (Rose's), head turned to the right. Irrigation of œsophagus with warm Thiersch's solution. Divulsion of the entire canal with Powell's urethral dilator armed with the rubber cap up to No. 30. This procedure was here just as easily done as in a case of urethral stricture. The instrument was caught at its introduction a number of times in a blind canal. It passed at last by bringing the handle far over to the right. There was therefore a curve to the right. Thus the whole œsophagus formed an S-curve. Irrigation repeated. A soft-rubber catheter, No. 30, passed into the stomach. Temperature later in the evening, 104°.

22d.—No. 30 was exchanged for 22, whereupon the temperature dropped promptly. Probably small tears inside of the canal had been compressed by the snugly-fitting tube. Their discharge was reabsorbed and caused the rise of temperature.

28th.—Deep narcosis; irrigation as before. Divulsion up to No. 35. No. 25 left in. This time no febrile reaction.

November 2d.—Narcosis deep, divulsion up to No. 40 (this number corresponds to the normal caliber of the undilated œsophagus of a grown person at a level with the bifurcation of the trachea*). Slight hæmorrhage from upper portion of œsophagus near the lower angle of the fistula. A stout drainage-tube of 32 was carried down into the stomach stretched over a piece of whalebone and left *in situ.* It slipped out in the following night and could not be replaced by the house surgeon. Other sizes of tube and catheter also refused to pass.

3d.—Light narcosis. Three inches and a half below the fistula there was found an obstacle which seemed at the time impassable for any instrument with a rounded extremity. Whenever that spot was reached and some pressure exerted on the tube, the child coughed hoarsely, yawned, even if fully under the anæsthetic, gagged and vomited, and bit her teeth. Stretching with the dilator created the same symptoms (reflex of the nervus vagus). A conical catheter, No. 21, was at last left in place.

Up to this time the child had been fed on strong, nourishing food. About three quarts of peptones, milk, broth, oatmeal and barley water with peptones, etc., besides three eggs, had been slowly poured into the stomach at regular intervals *pro die.* Nevertheless, the weight, which had at first gone up to twenty-five pounds, had lately rather decreased. Scales showed twenty-three pounds on November 6th. Stools smelled very bad. Evidently a great proportion of the food was not assimilated and left the intestinal tract undigested (dyspeptones). Bill of fare therefore reduced. Probably also the loss of saliva had something to do with the small degree of assimilation.*

6th.—Soft-rubber catheter with distal end No. 26 put in.

10th.—Permanent catheter came out during sleep. It was now entirely dispensed with. For every meal the tube attached to the glass funnel was introduced into the œsophagus for about two inches and then the food allowed to run in. It easily did so whenever the girl kept quiet, but stopped and was slightly regurgitated at once when she screamed. A cup of milk or other fluid was even swallowed without leakage at the fistula, if a condom slightly blown up with air was carefully pressed with the hands on the fistula or held there in place by a bandage.

14th.—Narcosis (mixed, deep). No. 26, which had passed eight days ago, is stopped three to four inches down. All attempts at overcoming the obstruction were futile. The same sensation was experienced as in entering a false urethral passage. Irrigation. After some trying, Powell's dilator slipped in. The instrument was firmly surrounded by the wall of the œsophagus, which thus, four days after the removal of the permanent catheter, had recontracted in its entire lower portion. There was no doubt a tubulous stricture of dense cicatricial tissue about three to four inches long beginning at that often-mentioned spot two inches to two inches and a half from the lower end of the fistula, which corresponded to the bifurcation of the trachea.† Repeated gradual divulsion of the whole tract step by step, from the cardia upward, up to No. 40, found at last great resistance. Marked reflex symptoms as at previous occasions. Irrigation. No subsequent reaction. Feeding without permanent tube as before.

Another test, made November 18th, showed again recontraction.

I now had treated the little patient for nearly eight weeks. Twice a permanent tube up to No. 27 had been borne, but a larger size was always pushed out inside of twenty-four hours. Four times the whole cicatricial tube had been divulsed, twice up to No. 40. Each time the stricture had refused to yield for any length of time. The task was of course to give the œsophagus a caliber which permitted of swallowing all kinds of food and could be preserved by passing a sound of at least No. 35 through the mouth. Only then the fistula in the neck could be closed by a second operation. Was there hope of coming to a successful end by continued stretching and divulsing? Or had I to apply to some other resource? The only other means which could still be now tried were electrolysis and direct application of the galvanic current for the sake of reabsorption of the cicatricial tissue, gastrostomy with consequent retrograde divulsion, and internal œsophagotomy.

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* V. Hacker. *Ueber die nach Verätzungen entstehenden Speiseröhrenverengerungen.* Wien, 1889, p. 8.

* Cf. Le Fort. Des indications thérapeutiques dans les rétrécissements cicatriciels et cancéreux de l'œsophage. *Bull. général de thérapeut.*, 1890, No. 2.

† I abstained from œsophagoscopy under electric light, as I could not see any advantage in its performance in this case.

I decided and got permission of the parents to attack the long lower stricture also with the knife, being well aware of the great danger of this interference.

23d.—Deep, mixed narcosis, Rose's posture. Thorough antiseptic irrigation. Stricture only admits No. 20. Otis's straight urethrotome is held at about three inches below the fistula, but passes after the handle has been carried far to the right. A strong vomiting spell, which is aggravated by screwing up the instrument. Rough cough, grinding of the teeth, great restlessness. Deeper narcosis. Urethrotome screwed up to No. 38. Knife points to the front and left. Division of stricture. Second incision in the same way to the front and right. Hæmorrhage not abundant; mostly venous. Stopped by irrigating with ice-cold Thiersch's solution. No permanent catheter. About ten minutes later another sudden explosion from the stomach. Two large pieces of curdled albumin, by far larger than any ever vomited before, are brought up and extracted through the fistula piecemeal.

4 P. M.—Three hours later, child restless, without fever; rectal alimentation.

9 P. M.—Temperature, 105·2°; pulse, 148; restlessness increased, general hyperæsthesia.

24th.—Patient struggles when fed. Soft-rubber catheter No. 26 passes without meeting the slightest obstruction or creating hæmorrhage. It nearly drops into the stomach. It is left in place. Within the next forty-eight hours the symptoms of a general meningitis appear. Twisting and spasms all over. Sensory, motor, and vaso-motor centers all involved. Abdomen soft, not tympanitic. No symptoms of lung trouble, pleuritis, or posterior mediastinitis. In spite of very careful nursing, the little patient succumbed on December 2d, nine days after the last operation.[*]

Post-mortem Examination, by Dr. T. Adler.—No mediastinitis, no peritonitis, no pleuritis. Suppurative meningitis, especially on the right side. Brain soft and pultaceous; nowhere else a suppurative focus. All organs in perfect condition. The œsophagus specimen is of great interest (Fig. 1). The posterior wall of the canal having been split in its entire length, it appears that the upper stricture is entirely cured. Surface smooth. No ridge (Fig. 2, *a*). Lip fistula in the side well established (Fig. 2, *b*).

The lumen of the canal below the superior stricture in the length of fully two inches dilated at least to double the size of the upper portion. Mucous membrane here unchanged. Muscularis thin. In the right half a superficial, nearly healed incision an inch long. (This is the only spot where the second cut, made with the urethrotome, took effect.) The lower stricture, three inches long, begins right behind the bifurcation of the trachea and ends about an inch above the cardia at a spot which corresponds to the hiatus œsophageus of the diaphragm. Mucous membrane of this last-mentioned portion (above cardia) perfectly normal; muscularis and peri-œsophageal tissue not thickened. An inch and a half below entrance to inferior stricture (and three inches and a half below the lower angle of the fistula in the neck), on the right side of the œsophagus, a false passage three quarters of an inch long (Fig. 2, *c*). Its entrance is marked by deep, irregular wrinkles of cicatricial tissue. A tongue-like process of normal mucous membrane extends downward within half an inch from this spot as a direct continuation of the upper normal mucous lining. The entire other surface of the stricture is covered with cicatrix.

Cut resulting from internal œsophagotomy in the left half of the canal (first incision), three inches long and a quarter of an inch deep, gaping, smooth, without surrounding inflammatory symptoms, entering the muscularis, nowhere penetrating (Fig. 2, *d*). Its direction points toward the tissue in front of the aorta. It has thoroughly divided the convex side of the stricture in its entire length[*] and swelled the caliber of the latter to at least No. 40 French. (Circumference nowhere less than an inch and a half, measured on the specimen which is hardened in alcohol.)

Mucous membrane of the stomach appears normal in all its parts.

There is no doubt that the remote cause of death was internal œsophagotomy, and the immediate, pyæmia, with the only one local inflammatory manifestation—"suppurative meningitis." Streptococci had entered the circulation in the œsophageal wound where venous bleeding at the time of operation had been especially marked, passed the capillaries of the pulmonary arteries which are the widest in our system, and were carried into the smaller ones of the brain as infectious emboli.

Could this result have been avoided? Was there any other way to cure the patient? In other words, had internal œsophagotomy been clearly indicated?

In trying to give a satisfactory answer to this, here vital, point three questions ought to be considered:

1. Could the former treatment, with the additional use of electrolysis or direct application of the galvanic current, have effected a cure if it had been carried out longer?

2. Was death due to the mode of carrying out the internal division of the stricture?

3. Would gastrostomy with retrograde divulsion have promised a permanent, quicker, and safer result?

With reference to the first question, the assumption will probably find little opposition that a longer-continued divulsion would, in this case at least, not have promised any further improvement. The stricture was long, cylindrical, and dense; it had to recontract after simple stretching.[†] More rapid and forced divulsion seemed to me too dangerous and not indicated. At one or the other spot the œsophageal wall might have ruptured and septic mediastinitis set up.

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[*] The constant presence of the œsophageal tube proved of the greatest benefit in this serious illness. Feeding could be kept up with excellent regularity. Digestion and assimilation went on uninterrupted, as demonstrated by the normal defecation and micturition.

[*] This fact refutes von Hacker's statement (*l. c.*, p. 117): "Longer strictures can not be fully divided with the help of internal œsophagotomy neither from above downward nor in the opposite direction. The post-mortem examination showed in all these cases an incision in the upper or lower half of the stricture only." The use of the urethrotome—which, when screwed up, brings the wall of the œsophagus on the stretch—enables an incision of the entire stenosed portion. That this be true is well demonstrated by my case. The depth of this incision will, of course, vary at different spots if the course of the stricture is curved. It will be deepest at the greatest convexity, provided the knife was turned to this side first, and this, I believe, should always be done. A thorough incision on one side alone seems to me to be sufficient. A second one can have effect only if the stricture is cut to a larger size with this second incision.

[†] A glance at the specimen also proves this view to be correct. The œsophageal wall, with the thickened peri-œsophageal tissue, is at the seat of the lower stricture at least four times as thick as at other normal spots.

Rapid divulsion, moreover, gives an unfavorable prognosis with reference to the permanency of the obtained result.

Perhaps the application of the ordinary galvanic current (one to two elements), cathode inside of the stricture, might have reabsorbed some of the cicatricial tissue. But a constant improvement was not to be expected by it. Electrolysis, although having proved of use in the hands of others,* also promised very little in this case in view of the length and the tubulous character of the stricture.

The stricture therefore had to be divided with the knife unless I combined gastrostomy with retrograde slow divulsion first as a trial. Which method of internal cutting was, under the circumstances, the most preferable? Incision with a blunt-pointed and long-handled bistoury or with a herniotome which had to be introduced alongside a grooved director,† or alongside a small rubber bougie (as used for cutting an anterior urethral stricture) was here impossible on account of the curve of the narrow stricture. A special œsophagotome, according to Trélat, Collin, or others, was not at hand.‡ A urethrotome—which, as I afterward found in perusing the literature, had only once been used before in this operation #—seemed to offer the best advantages.

The choice of the proper instrument, however, was not the main point at issue. It was that to every case of internal œsophagotomy, even to-day, one immense danger is attached—namely, impossibility of previous disinfection. If there had been a way of thoroughly disinfecting the œsophagus before cutting the stricture, as we are accustomed and bound to do in the urethra before internal urethrotomy, I am sure my little patient would not have died, but probably be cured to-day; for that only a *free* division of the contracted long cicatricial tube does really "cure" such a stricture which does not yield to stretching, where false passages have been bored by the frequent attempts at sounding from the mouth, I am fully satisfied. I would put the *radical treatment* of these contractions on exactly the same basis as that of urethral strictures.

Unhappily, the surgery of the posterior mediastinum has not yet advanced so far as to enable us to attack the lower œsophageal stricture as we do the upper ones—from outside. Perhaps surgery will never attempt as much, and, if it would, such an undertaking would perhaps be unwise and impracticable. There are no soft tissues around which in cicatrizing with the œsophageal wound would pull its cut surfaces outward in the shape of a funnel, as the perinæum does after external urethrotomy, thus partially guarding against a recurrence of the trouble. I therefore believe that rebellious strictures of the œsophagus in its intrathoracic portion must always be divided *from the inside*, provided they are divided at all. Such a thorough operation, with the help of a *deep* incision, is here of course accompanied, besides the probable septic infection, as emphasized before, by another great danger—perforation of the œsophageal wall by the knife, with subsequent posterior mediastinitis, pleuritis, or arterial fatal hæmorrhage from the aorta or common carotid. The latter accident can partially be avoided by not carrying the incision so deep as to penetrate the œsophageal wall in its entire thickness. It will be a matter of personal tact and judgment to avoid such an accident as much as possible. A number of shallow cuts with subsequent dilatation, if necessary repeated, might in some cases prove of permanent benefit.* Still we have a right to presume that a good deep cut which thoroughly divides the cicatricial mass in its entire length, as it had been done in my case, promises a real radical cure, without necessitating further or continued regular sounding for many years, perhaps for life. It will then be sufficient to test the caliber once or twice a year, as is the rule in strictures of the urethra which have been cut.†

Reabsorption of septic material can of course take place as well from a superficial as from a deep wound. This scar tissue, after some time, generally is quite vascular, especially if irritated by instrumental manipulations. This also would be my answer to any one who might say that the fatal result in my case had been due to the depth of the incision, which, as mentioned above, implicated the muscular part of the canal. I firmly believe that, the same hard luck being imminent, a more superficial wound in that spot could just as well have given entrance to the streptococci which caused the fatal blood poisoning.

I still have to answer the third question put above: Would gastrostomy with retrograde divulsion have given a better result in this case? I believe decidedly not. Besides the necessity which presented itself in my patient to attack the superior constricting ring with the knife, which for effecting a radical cure could of course only be done correctly by external œsophagotomy, it can be taken for granted that

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* F. Hjort. Die Behandlung der Speiseröhrenverengerungen. *Achte Sitzung d. Intern. med. Cong. zu Kopenhagen*, 1884. Rep. in *Ctrlbl. f. Chirurgie*, 1886, p. 69. Electrolysis was here carried out after gastrostomy in a retrograde manner in one case with a most satisfactory result.

† C. Gussenbauer. Ueber kombinirte Oesophagotomie. *Zeitschrift für Heilkunde*, vol. iv, p. 33.

‡ If gastrostomy had been done, the small triangular knives recommended by F. Lange, of this city, which are pulled through the stricture on a thread from below, would have come into consideration.

Cf. K. G. Lennander. Narbenstrictur des Oes. bei einem zweijährigen Kinde. Aeussere Oesophagotomie. Genesung. Rep. *Ctrlbl. f. Chir.*, 1890, p. 148. Lennander used Maisonneuve's urethrotome, which cuts from anteriorly backward. This is especially dangerous. It may thus happen that the instrument is introduced into a false passage and the knife divides the wall of the latter (cf. v. Hacker, *l. c.*, p. 66 and following pages). The internal œsophagotomy should always be done retrograde, the knife having first passed beyond the stricture. Gradual blunt dilatation, therefore, has to precede the internal cutting if the stenosis is very tight. In a number of cases a guide pushed up from the stomach will lead the way. (See below.)

* Von Bergmann (Ueber Operationen am Schlundröhre, *Deutsche med. Wochenschr.*, 1883, No. 42 ü. 43) wants internal œsophagotomy done only in cases where a cicatricial, very short, still permeable, valve-like stricture refuses to yield to gradual dilatation. He advocates a "superficial, multiple *débridement.*" In a case similar to the one described before, I would, in the future, probably also first satisfy myself with one or two more superficial incisions, and repeat them if necessary, protected by the method proposed below, after having tried retrograde divulsion. I would then first perform internal œsophagotomy on a tubulous stricture, without screwing up the urethrotome to the desired caliber at once—rather proceed gradually.

† But the deep, thorough division of the stricture, made as in urethrotomy, should in all these cases be the very last resort, in view of its manifold dangerous consequences.

stretching from below would have likewise been followed by recontraction, even if a larger size of tubes or bougies could have been passed and left *in situ*. Of course not all strictures of the lower portion of the œsophagus present the same difficulties of treatment. Many *can* be stretched by long-continued sounding and kept patent if tested now and then. The sooner this treatment is started, the oftener subsequent trouble and operative treatment can be avoided. In fact, as the stricture is bound to come in the majority of cases, sounding should always be started about two to four weeks after the accident, and kept up at regular intervals with increasing sizes of the bougies, if possible, for many years, perhaps for life.* The majority of these patients will, of course, not listen to such urgent medical advice, and the family physician, who mostly gets these cases first in hand, will often neglect to submit his resisting client to this clearly indicated prophylactic but painful treatment. Thus, after some time surgical help is generally called for. Should, then, gastrostomy or œsophagotomy be performed? It would be absurd to draw definite conclusions in this direction from the experience in one single case. Still, I should venture to say that, in children at least, external œsophagotomy and subsequent stretching from above seems to me to be the preferable operation—the one which should be first tried.

How easily and often also in older patients the so-called impermeable stricture of the œsophagus in its thoracic portion can be successfully overcome and widened from a wound in the neck, has only very lately been again emphasized by Graser, of Erlangen.† He stated how easily a sound would glide through a strictured œsophagus into the stomach from an opening in the neck, which had persistently refused to enter and pass the stricture from the mouth. From a fistula in the neck the sound has to pass a straight way downward to the stenosis, whereas from the mouth this way is curved. The entrance to the stricture is thus easier found. The bougie or tube, if left in place, causes no annoyance and can soon be exchanged for a larger size. It took, in some cases, only one week before the largest size met the stricture without difficulty. The lip fistula in the neck is closed as soon as the sound can also be passed with equal ease from the mouth down into the stomach.

In children, where it is especially important, we can avoid by the œsophageal operation the annoying constant gagging and vomiting which the presence of a tube in the throat and mouth or in nasopharynx and nose drawn up through the gastric fistula necessarily produces, for some time, more so if it is left *in situ*. And this again is advisable, because it is well known that rapid dilatation is best done by permanent catheterism.‡

On the other hand, gastrostomy is also a comparatively easy and safe operation. If carried out according to von Hacker (that is, by splitting the left rectus muscle longitudinally and using its belly as an artificial constrictor),* the leakage can with certainty be avoided; and, if the von Hacker-Scheimpflug † cannula is put in, feeding with semi-solid and solid diet may be at once begun. This is a very important factor in patients who have become greatly emaciated. After external œsophagotomy, only fluid diet can in the beginning be given, on account of the narrow caliber of the permanent catheter.

I have brought along here this cannula, as it was made for me by the W. F. Ford Surgical Instrument Company. I wanted to use it in a patient of mine, seventy-one years old, who had been operated upon by me according to von Hacker's method for cancerous stricture of the œsophagus, and had an excellent, perfectly patent fistula through the rectus muscle still, after nine months.‡ In this fistula he was wearing a stout rubber tube. Three days before I received the cannula from the instrument company the patient suddenly died from an intercurrent pneumonia inside of two days.

As is shown in the accompanying cut (Fig. 4, which represents schematically the cannula in position), this cannula, made of silver, is constructed according to the principle as represented in Trendelenburg's tampon-cannula for the trachea. It can be easily made in different dimensions, according to the width and depth of the gastric fistula, by any instrument maker. A double rubber balloon of hour-glass shape, each part of which can be blown up with the help of the small tube running inside the larger one (Fig. 4, *t*), is pushed over the cannula and fastened there in shal-

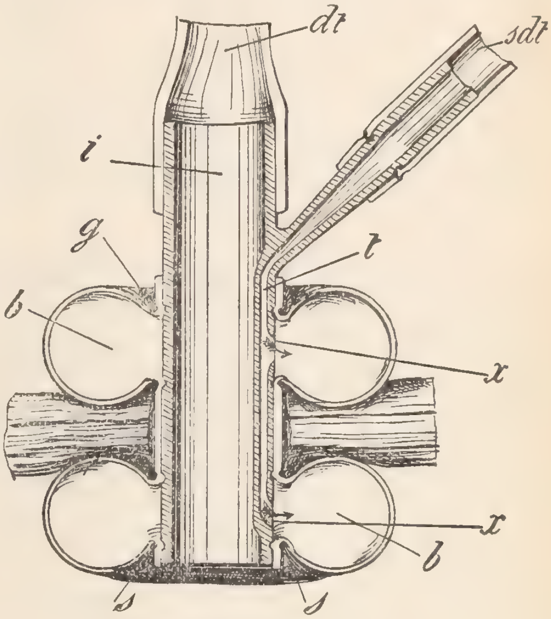

Fig. 4.

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* Maydl (Die Magen-Chirurgie der letzten fünf Jahre, *Internat. klin. Rundschau*, 1887) proposes to perform gastrostomy at once, right after the cauterization of the œsophagus, and von Hacker (*loc. cit.*, p. 121) adds to this proposition the one to start sounding of the œsophagus with the help of this gastric fistula two or three weeks later.

† Zur Behandlung der Oesophagus-Stenosen. *Verhandlungen der deutschen Gesellschaft für Chirurgie*, XIX. Congress, 1890, p. 136.

‡ The loss of saliva, which mostly passes through the wound in the neck and seems not to be insignificant for nutrition, can partially be avoided by tying a blown-up rubber bulb on the fistula.

* *Wiener med. Wochenschrift*, 1886, Nos. 31 and 32.

† *Wiener klin. Wochenschrift*, 1888, pp. 491, 517.

‡ Cf. *New York Medical Journal*, 1891, p. 521.

low grooves (Fig. 4, *g*) with silk threads (Fig. 4, *s*). The rubber tube in the middle, which connects the two balloons, is best tied on the cannula, in the length of about a quarter of an inch, by simply running a silk thread around it a number of times. Thus a free space is formed between the two blown-up balloons which will not press upon the borders of the fistulous tract. If the latter is still sore, a piece of iodoform gauze, dry or spread with a salve, can be conveniently rolled around this spot. It is firmly held in place by the two balloons. The latter, when distended, must take the shape of air-pillows, which fit water-tight all around and should not press the borders of the fistula (Fig. 4, *b*). This point is especially important with reference to the lower one. To put the whole into working order, a drainage-tube of any desirable length is fastened to the outer end of the large cannula (Fig. 4, *dt*) and closed by a clamp. Through it the food is poured into the stomach (Fig. 3). Another rubber drainage-tube is tied on the small funnel-shaped silver tube to facilitate proper filling of the balloons (Fig. 4, *sdt*).

The sounding from below itself has been greatly facilitated by the method published by Hagenbach,* advised for strictures which are still permeable. A shot on a long thread is swallowed. The one end of the thread is held in front of the mouth and the other end drawn out of the stomach through the gastric fistula. A strong silk thread is then tied to the lower end of the first one outside of the abdominal wall and pulled through the stricture and out of the mouth. Both ends are then tied together. Every day a sound is tied to the thread outside of the stomach and drawn through fistula, cardia, and œsophagus upward. The size can be rapidly increased. The thread is constantly left *in situ*, and does not cause any inconvenience.

If the stricture is impermeable from above, the cardia must be searched for through the gastric fistula. The tube and electric light, as used in urethroscopy, may there often be of great service to detect the sometimes greatly drawn aside and constricted lumen. If found, a thin bougie is pushed up through into the mouth. This retrograde treatment is continued so long until the same large-sized tube passes the stricture from above just as easily as it is pulled through with the help of the guide from below upward. Then the opening in the stomach and the abdominal wound are closed by special suture. Of course, this second operation is more difficult and serious than that done for closing the lateral opening in the œsophagus at the neck.† In order to estimate the real value of retrograde dilatation without an internal cutting operation, the result obtained should be re-examined after one to three years. In a number of these cases internal œsophagotomy had, and will still have, to be added, with, of course, not less danger than in any other case. We always are forced to resort to it if the stricture does not yield to larger sizes of the bougie, or if it rapidly recontracts.

Among the one hundred clinical cases of cicatricial stricture of the œsophagus selected and reported by von Hacker (*l. c.*), I find internal œsophagotomy performed fourteen times* (in one case it had to be done twice). In five it had been combined with the external incision (Cases I, XI, XIII [2], LII, XCIX of the tabula; Case XIII is the one just referred to; both operations were done here twice, combined, by Gussenbauer). Of these five cases, three were cured, one died of hæmorrhage fifteen days after the operation; one of mediastinitis, pleuritis, and peritonitis on the third day after the operation. (Sands's patient, mentioned in foot-note, died of shock twelve hours after the operation.) Of the remaining eight, where internal œsophagotomy alone had been done, six are reported as cured, one died three months after the operation of suppurative pleuritis and pneumonia, another of mediastinitis and pleuritis. Meningitis as a sequela to the operation in question, as observed in my case, I found nowhere reported. But even one single case of such a kind gives sufficient proof that, with internal œsophagotomy as heretofore performed, we may well escape the dangers which often, sooner or later, followed its performance—namely, pleuritis, mediastinitis, peritonitis, and pneumonia—but still can be shipwrecked on the rock which so far was in our way in every one of these cases: the necessity of doing a cutting operation in a field which could not be disinfected either before or after its performance.

Have we, then, no means to guard against blood poisoning in this operation? Can not a method be found which lets us operate in a thoroughly disinfected field? I believe it can, and I should propose to proceed in the following manner:

If external œsophagotomy had been primarily performed, gastrostomy has to be added, and *vice versa*. Thus that portion of the œsophagus which presents the operating field is temporarily excluded from the digestive tract. Before starting the internal incision, irrigate the œsophagus from the fistula in the neck downward with Thiersch's solution, or a solution of permanganate of potassium, allowing the water to pass out of the gastric opening, and during a sufficiently long time to be sure that this portion of the canal is thoroughly disinfected. Also carefully wash the stomach from below. (This preparatory treatment may be repeated during a number of days.) Push an iodoformized sponge, or a ball of iodoform gauze on a thread, into the upper portion of the œsophagus, between the opening in the neck and pharynx, so as to guard against the descent of the secretions of the mouth. Then do internal œsophagotomy, under constant irrigation, from the wound in the neck downward. Continue same after the operation is finished. The water will run into the stomach and readily escape through the gastric fistula. At last pull an iodoformized sponge or a ball of iodoform gauze, with the help of a bougie and thread, through the gastric opening and the cardia into the lower end of the œsophagus. This will prevent regurgitation of the contents of the stomach in the subsequent direct feeding through the abdominal opening. Of course, also rectal alimentation could be resorted to in the first four to five days. But that would seem to be a rather unnecessary precaution. If desired, frequent antiseptic irrigation of that portion of the œsophagus between the two plugs, by way of the wound in the neck, could be added, the patient being in the recumbent posture.

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* Kasuistische Beiträge zur retrograden Dilatation von Oesophagusstricturen (aus der chirurg. Klinik zur Basel). *Korrespondenzblatt f. schweizer Aerzte*, 1889, No. 5.

† If gastrostomy was done through the belly of the left rectus muscle, the gastric fistula might eventually close without further operating as soon as the tube, which passed through it into the stomach, had been removed. The fistula in the neck may now and then also heal in this way.

* In looking up a few of the reported cases in the original, I find that one case of combined œsophagotomy done by Sands (*N. Y. Med. Jour.*, 1884, p. 534) has not been included in the tabula. (Boy.)

I trust that this my proposition with reference to internal œsophagotomy according to antiseptic principles would render it just as safe, in this respect at least, as internal urethrotomy. It can then be carried out with the instruments as used in urethral surgery. If Gerster's urethrotome can be passed through the stricture, it will deserve preference, as it stretches the stricture transversely over the instrument. The dividing knife will then less easily cut through the œsophageal wall. For older children and grown persons these instruments, then, have to be made in a larger size, or rather longer, which, no doubt, can be quite easily done.

In conclusion, I offer the following propositions :

1. After swallowing acids, etc., sounding should be begun as soon as it can be made out that the internal wounds have healed, certainly not later than two to four weeks after the accident. This prophylactic treatment has to be continued at regular intervals for a long period—if necessary, for life. Gastrostomy can be primarily performed for this purpose (Maydl, von Hacker).

2. If a stricture of the œsophagus has developed and is impermeable from the mouth, the patient should be submitted to an operation as early as possible. No forcible dilatation or boring with the sound should be permitted. If the latter is done, the formation of a false passage is favored. The œsophagus has thus often been perforated.

3. External œsophagotomy for the establishment of a temporary fistula in the neck (œsophagostomy) will be found useful and sufficient in many of these cases, especially in children. The stricture can be generally passed quite easily from this opening. A tube can be left *in situ* without the annoyances which are caused by passing it through the nose and pharynx. This operation is always indicated if, besides an impermeable stricture in the lower portion of the œsophagus or behind the bifurcation of the trachea, a second (or third) one is present at a level with, or not far below, the cricoid cartilage.

4. In grown patients and those who are emaciated and require immediate forcible nutrition, primary gastrostomy, with subsequent retrograde sounding, may be preferable.

5. If the stricture has been successfully stretched, and if the same sound which passed from the wound in the neck can also be pushed down through the mouth, the fistula has to be closed. If gastrostomy had been performed, this second operation generally requires laparotomy and separate suture of stomach and abdominal wound.

6. In a number of cases there is a limit to stretching and divulsion, or the repeatedly widened stricture rapidly recontracts. Then internal œsophagotomy is indicated as the only means to cure the patient.

7. Internal œsophagotomy, if performed under these circumstances, is a very dangerous operation, especially on account of our present lack of means to render the operating field free of infectious material.

8. A thorough disinfection of the intrathoracic portion of the œsophagus seems feasible by first adding gastrostomy to external œsophagotomy, and *vice versa.* Then the operating field and the stomach can be cleansed by antiseptic irrigation before and after the operation. Through temporary antiseptic tamponade of the cardiac portion of the œsophagus and of that between the fistula in the neck and pharynx we may hope to guard against contamination of the wound.

9. From a wound in the neck internal œsophagotomy can be carried out in the same way and with the same instruments as used for dividing strictures of the anterior urethra from within. The division should be made in a retrograde way only, the knife having been first passed beyond the stricture. A guide pushed up from the gastric fistula will help to accomplish this, even in obstinate cases. It may become necessary, especially in adults, to have an instrument of a special length, and sometimes also curve, constructed for this purpose.

THE INFLUENCE OF CERTAIN DIATHETIC CONDITIONS UPON THE PROGNOSIS IN OPERATIONS UPON THE THROAT.*

By D. BRYSON DELAVAN, M. D.

The influence of diathesis upon the general physical forces of a patient is always of sufficient importance to challenge attention. Under no circumstances is it so worthy of study as to the surgeon when estimating the chances of success and the possible sources of danger in the case of a proposed operation. That the success of an operation may be seriously threatened through the presence of some systemic fault is not more true than it is that in the existence of certain known dyscrasias any attempt at surgical interference may be followed by disastrous results.

It will be the object of this paper to call attention to several general conditions that may be associated with one or two of the more common forms of disease of the throat, and to study whether in such cases the methods of operation are as simple and free from danger, recovery as good, and the ultimate results as lasting as under ordinary circumstances.

The conditions to which reference will be made are exophthalmic goître and lymphadenoma, and the strumous, the rheumatic, and the hæmorrhagic diatheses.

Beginning with exophthalmic goître and lymphadenoma, both of these diseases present points of marked similarity, so far as concerns the throat, for in both the tonsils are often enlarged and the sufferings of the patient greatly increased thereby. Unless contra-indicated by some special reason arising from the general disease, the obvious treatment for the relief of the obstruction would be the removal of the obstructing glands. Experience teaches us that amygdalotomy may be performed in these cases without unusual difficulty. The writer has operated in several cases of both diseases without undue bleeding and with excellent ultimate results.

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* Read before the American Laryngological Association at its fourteenth annual congress.

In both conditions, however, the process of healing is generally somewhat slower than in the ordinary subject.

This may be accounted for, in part, by the great size of the glands removed. If we regard exophthalmus as a disease involving disturbance of the vaso motor system, it would be fair to ask whether under the influence of this condition the possibilities of hæmorrhage would not be materially increased and operations upon such patients be thus attended with greater risk.

Some authors have held that exophthalmus might be cured by the removal of adenoid enlargement of the pharynx. While by no means prepared to accept this view, the writer is of the opinion that both in exophthalmia and in lymphadenoma operations upon the adenoid elements of the throat do not involve unusual elements of danger and are followed by excellent general results. Further investigation, however, upon this point is desirable.

Case I.—Mrs. X., aged thirty. General lymphadenoma, cervical glands especially enlarged. Tonsils greatly hypertrophied, meeting in median line. Swallowing difficult. Dyspnœa marked, especially at night. Amygdalotomy caused average amount of bleeding, and was followed by complete relief of dyspnœa and dysphagia. Cervical glands, of course, unaffected.

Case II.—Miss Y., aged twenty. Exophthalmia, with enlargement of thyreoid, palpitation of heart, and enormous hypertrophy of tonsils. Duration of disease, four years. Both tonsils were removed at the same sitting with the Mackenzie amygdalotome. Very slight bleeding. Pharynx completely healed in five days. Local symptoms entirely relieved, and marked improvement in general condition one month later.

In rheumatic subjects with enlarged tonsils, with which are associated recurring attacks of acute amygdalitis and of abscess of the tonsil, the removal of the gland is attended with no special difficulty or danger, and the results are so beneficial as to place the operation among the most brilliant in surgery.

A large number of the more severe cases of adenoid enlargement of the throat occur in strumous subjects. As is well known, the progeny of tuberculous or of syphilitic parents will commonly suffer from local conditions that call for operation. If these diatheses are uncomplicated, operation upon such cases appears to be simple and free from extraordinary danger. Recovery may be somewhat delayed, the bleeding may be more pronounced, and the various reactions possible under such circumstances may be somewhat more active than usual. Otherwise there is little difference between them and the ordinary uncomplicated case. As to the ultimate results, however, there is decidedly greater difficulty in these cases in the complete and thorough removal of the offending tissue, and the fragments that may be left behind are more likely to increase in volume as the patient, if a child, grows older. Occasionally they may, in time, attain sufficient size to require a second operation. In spite of this, indeed, for the very reason of it, it is urgently necessary that these cases be relieved as soon as possible, even although it may be necessary to interfere again at some future time, as the presence of adenoid hypertrophies directly predisposes to the development of similar enlargements in their immediate vicinity, and the general effects are so injurious that the patient can not be relieved at too early a date.

Case III.—Miss B., strumous. At eight years of age both tonsils were enormously enlarged and were thoroughly removed by a distinguished specialist. At fourteen she consulted the writer, who found a pair of tonsils of great size meeting in the median line. Their removal required the largest-sized amygdalotome. Examination of the upper pharynx revealed an adenoid growth which filled the retronasal space. This was removed under ether. Three years later the patient, then living abroad, suffered a return of the old symptoms of retropharyngeal obstruction, and was again operated upon for its removal by a surgeon who stated that its mass equaled that of a pigeon's egg. There has been a very slight recurrence since.

Passing now from these more common and better understood topics, let us consider one that, although less usual, has for us a far greater and more active interest—namely, the condition known as "hæmophilia" or the hæmorrhagic diathesis. While well-marked, typical hæmophilia may be a somewhat rare condition, it is certain that cases now and then present themselves in which it is possible to trace it and to prove that it exists to such a well-defined degree that the performance of a surgical operation would subject the patient to actual risk. The writer discovered eight such cases in the space of one year. In his experience the relative proportion of cases of adenoid enlargement among hæmophilic children is greater than the average. Instances therefore must occasionally come to our notice in which an operation would be desirable were it not for the existing dyscrasia, and the problem of dealing with them becomes a most serious one. Again, certain cases of struma show a marked tendency to bleed, and this tendency may be noticed in several members of the same family without, however, the typical signs of hæmophilia being present.

Let us glance over the statistics of accidents and operations in general in hæmophiliacs and study their results. Not to quote many others reported, fatal hæmorrhages have occurred from the following wounds: Slight scratches on the skin or abrasion of the dermis; laceration of the frenum of the lip; bite of the tongue; blow on the nose; injury to the finger; cut in paring the nails; rupture of the hymen. Death after operation has occurred from cutting of the frenum linguæ (1), leeching (5), venesection (4), blistering (2), extraction of tooth (12), circumcision (10), cutting the umbilical cord (4), vaccination (2), uvulotomy (1), and after numerous more important operations. All authorities agree that traumatic hæmorrhage must be prevented by avoiding all surgical operations upon a person affected with hæmophilia unless life is in peril.

The statements just quoted, incomplete although they are, have been long on record, and are doubtless well known to all.

Returning, however, to diseases of the throat, I find a state of affairs quite as striking although by no means so well known and generally recognized. Indeed, I am not aware that the attention of specialists has ever been definitely called to this particular phase of the case, and I would urge its careful consideration, in view of the prevalent idea to the effect that for the removal of pharyngeal adenoids certain surgical procedures are entirely justifiable. Thus, several authors state that, in the presence of the hæmorrhagic diathesis, the galvano-caustic methods should be substituted for cutting operations, while others have gone so far as to devise specially constructed instruments for this very purpose, thus proving that in their view operation upon these cases is perfectly legitimate. Such an opinion is at direct variance with the whole precept and experience of the past. In looking over the history of our own department for the last few years, an interesting collection of facts is developed. Amygdalotomy has been performed with greatly increased frequency, while the value of operation for the removal of adenoid hypertrophies has become universally recognized and the operation performed hundreds of times and by many operators. While hæmorrhage after amygdalotomy in the child is very rare, the writer has reported one case in which it proved alarming, and this occurred in a child who was unquestionably a bleeder. Fortunately, the hæmorrhage, which was distinctly capillary, was stopped. The history of adenoid hypertrophy at the vault of the pharynx has not been so favorable. A case is referred to by Hooper, in which, following the simple examination of the pharynx with the finger in an infant, a slight abrasion of the surface of a large adenoid resulted in a fatal hæmorrhage. In another case the removal of an adenoid of moderate size from a child of four produced a hæmorrhage which ultimately resulted in death. A third instance occurred, unfortunately, in my own practice about two years ago, and is of sufficient interest to warrant it being placed on record.

Case IV.—Boy, aged two years and a half. Operation under ether by means of Löwenberg's forceps and finger nail. Amount of bleeding at time of operation not unusual. Blood coagulated well and bleeding ceased shortly after completion of operation. Nothing occurred until eight hours after operation, when there was a somewhat profuse bleeding from the nose, followed by a slight rise of temperature and a rapid, irritable condition of the pulse. These symptoms subsided before morning, and when seen by the family physician at 9 A. M. the child was bright and natural in appearance, with normal color and no indication whatever of reaction from the operation or of impending danger. At 12.30 the patient began to grow pale and restless. At 1 he vomited for the first time after the operation, throwing up a large quantity of blood. At 2, having become more and more restless, he again vomited an amount about equal to that first thrown up. At 2.30 he threw up a smaller quantity, and again at about 3 a still smaller amount. When seen by the writer at 3.30 the child was moribund, the surface being cold and pallid, the lips pinched and purple, and the pulse at the wrist imperceptible. Examination of the throat revealed a slight oozing from the upper pharynx. Active measures for relief proved useless, and seven hours after the last attack of vomiting the child died.

The points of special interest in this case are as follows: 1. It has for years been the custom of the writer to investigate before operation the history of every case with a view to finding whether or not any tendency to bleeding existed. In the present instance he had questioned both parents closely and both had denied all knowledge of any such predisposition. Afterward in a general family discussion it was demonstrated that the boy's maternal grandfather and several other relatives of that line had been distinctly hæmorrhagic, and two weeks after our accident a maternal aunt of the patient sustained a slight cut of the finger from which she nearly bled to death. 2. The typical exhibition of hæmophilia given by the patient, although the condition had never been recognized. The grandfather was a bleeder. The mother was distinctly not so, although her younger sister was. The patient was not the first-born of his parents. He was under five years of age and had light hair, blue eyes, thin skin, and prominent veins. The family were German and German-American on both sides. All of these points are especially emphasized in the books. 3. The peculiar course of the hæmorrhage. There was no unusual loss of blood at the time of operation. Recurrence took place eight hours later, but the flow was easily checked, and there was no appearance whatever of a return of it for twelve hours, when a second recurrence took place, of such severity as to destroy the patient within little more than two hours.

Thus it appears that operations upon the throat are not less dangerous, other things being equal, in cases of hæmophilia than are surgical procedures upon other parts of the body. If this be true, what reliance, if any, can be placed upon the special methods of operation that are said to be at our command? Are we justified in accepting the statement that the galvano-cautery may be used in these cases? The answer would be in the affirmative if it were possible to prove that the galvano-cautery is a reliable hæmostatic. Unfortunately, the contention so freely advanced can hardly be supported. It is a matter of common experience to find a slight hæmorrhage following the application of the cautery to the nasal mucous membrane, and in cases where no special tendency to bleeding is present. Of course, it may be argued that under such circumstances the cautery has not been applied with sufficient care, and that, raised to an unduly high temperature, it has been allowed to do its work too rapidly. All this is true, but, even so, it is not uncommon for bleeding to be caused at the hands of the most experienced operators. This would prove that the perfect regulation of the cautery is a somewhat difficult matter. Moreover, we may escape the danger of immediate hæmorrhage only to be confronted later on by secondary bleeding. Several cases of secondary hæmorrhage after the use of the cautery have been reported, while in the case of a boy, not a hæmophiliac, upon whose tonsils the writer used the galvano-cautery, a brisk though not important hæmorrhage occurred on the separation of a slough upon the eighth day. The same phenomenon is not uncommonly manifested in the nasal cavity.

If, then, the galvano-cautery can not be trusted to prevent immediate or secondary bleeding in ordinary cases, it is certainly not a sure reliance in the presence of the hæmorrhagic diathesis. And we have no method calculated to take its place. What, then, should be done in cases which seem absolutely to require operation, as many of them do? Left to themselves, they are exposed to the certainty of severe suffering and the possibility of mortal peril. Take such an example as the following:

Case V.—The daughter of wealthy parents, aged eight, suffered from extensive hypertrophy of the tonsils and pharyngeal adenoids. She was distinctly hæmorrhagic. She was placed in the hands of one of the most distinguished of living specialists, who advised against operation, and did the best he could to relieve the patient by local applications and general hygienic means. The child contracted diphtheria, which rapidly progressed from bad to worse until, with every other possible complication, dyspnœa, caused by swelling above the larynx, which rendered intubation impossible, became so urgent that tracheotomy was required. Although the operation was performed with the greatest care, the edges of the cervical wound bled up to the moment of the patient's death, thus proving the hæmorrhagic tendency, and establishing the objections against the surgical treatment of the hypertrophied glands.

Obviously the physician pursued the only course open to him in the light of our present knowledge. Any other would have been at distinct variance with the established rules of surgical pathology. And yet, in reviewing the case, we find the patient placed between the horns of a veritable dilemma. To operate was to invite the almost certain result of severe, if not of actually fatal, bleeding. Not to operate was to expose the child to the hardly less imminent peril associated with the first attack of diphtheria or of scarlet fever, with which she, more than any other patient, was likely to be seized.

As has been already stated, hæmophilic children seem to suffer from throat troubles to an unusual degree. Is it necessary that we, fearful of operating upon them by known methods, should leave them to their fate? Let us hope rather that it may be possible to discover some means by which they may be relieved easily and without the dangers attending those in present use.

To sum up:

1. Rigid examination as to the possible existence of the hæmorrhagic diathesis should be made prior to operation in every case.
2. In the existence of hæmophilia, operation by any procedure at present known is absolutely contra-indicated.
3. Since many of these cases urgently require relief, it is most desirable that a method of reaching them more satisfactory than any heretofore practiced be suggested.

[Since the presentation of the foregoing paper an interesting article, by J. L. Watkins, M. D., Nashville, Tenn., upon the pathology and treatment of hæmophilia, has appeared (*New York Medical Journal*, August 13, 1892). In this the writer holds that the actual condition in hæmophilia is a deficiency of calcium salts in the blood, and particularly of the chloride of calcium. He shows that bleeding is not likely to occur when these chemicals are present in normal quantities, that they are lacking in the blood of hæmophiliacs which he has examined, that their addition to hæmophiliac blood will cause it to coagulate and *vice versa*, and that, in hæmophiliac subjects, their administration has been followed by an almost immediate relief of the condition. While he does not explain the fact that hæmophiliac blood may, in certain cases, show a decided tendency to coagulation, and while the number of patients treated is yet small, the article is most welcome, as offering a possible explanation of this hitherto dreaded condition, and a simple means for its relief. If it can be proved beyond doubt that the hæmophiliac condition can be cured, there will no longer remain the necessity for special methods of operation on the one hand, nor the abandonment of the patient to the evils arising from his throat troubles on the other, and in cases where the history admits of any doubt, a short course of preparatory treatment before operation will remove the patient beyond the possibility of danger.]

TESTS ON WOMEN
OF THE RED COLORING MATTER OF THE BLOOD.

By ETHEL BLACKWELL, S. B.

For some time past physicians have been testing weak patients to see whether they were anæmic—*i. e.*, whether their blood contained an insufficient amount of hæmoglobin or red coloring matter. It was with special interest in the tests on women that I took up the hæmoglobin experiments. The work was done at Bryn Mawr College under the supervision of Dr. Joseph W. Warren. I will give the subject more or less in detail and in about the order of the practical treatment, so that the connections of the experiments may be best seen and the suggestions possibly help other

Normals.

1.	97·2	5, or 12·5 per cent.	10, or 25 per cent.
2.	97		
3.	97		
4.	96·2		
5.	95·8		
6.	94·4	5, or 12·5 per cent.	
7.	93		
8.	92		
9.	91·8		
10.	90·6		
11.	89·2	6, or 15 per cent.	18, or 45 per cent.
12.	89·2		
13.	86·9		
14.	86·3		
15.	86		
16.	85		
17.	84·4	12, or 30 per cent.	
18.	84		
19.	83·6		
20.	83·2		
21.	83		
22.	82·4		
23.	82		
24.	81·6		
25.	80·8		
26.	80·4		
27.	80·2		
28.	80		
29.	79	9, or 22·5 per cent.	11, or 27·5 per cent.
30.	78·9		
31.	78·3		
32.	78·3		
33.	77		
34.	76		
35.	76		
36.	75·5		
37.	75		
38.	74·3	2, or 5 per cent.	
39.	73		
40.	51	1, or 2·5 per cent.	

investigators. The results of the experiments are given without reference to others' work.

The method of testing was practically that of Fleischl. The instrument used was Fleischl's hæmatometer. The locality tested was the ball, generally of the third or fourth finger, this locality being taken simply because it was by far the most convenient. In the early work corroborative tests were made, and in all tests the mean of five readings was taken. (Tenths may, of course, be neglected.) Most of the tests were made at about 7 P. M.

Testing forty of the college girls without discrimination, I found 10, or 25 per cent., to be above 90 on the Fleischl scale; 18, or 45 per cent., between 80 and 90; 11, or 27·5 per cent., between 70 and 80; and 1, or 2·5 per cent., at 51; or, putting it another way, 2·5 per cent. at 51; 5 per cent. between 70 and 75; 22·5 per cent. between 75 and 80; 30 per cent. between 80 and 85; 15 per cent. between 85 and 90; 12·5 per cent. between 90 and 95; and 12·5 per cent. between 95 and 100. It will be seen that nearly half were in the eighties, and the rest about equally divided between the seventies and nineties.

These figures I have called the "normals." They are determined by averaging *all* of the 7 P. M. tests made on the individual. (See table on page 570.)

On examination, twelve of the above forty were seen to be first-year students averaging twenty years in age; thirteen were undergraduate students, other than first year, averaging twenty-three years in age; and fifteen were graduate students averaging twenty-six years in age. It must be remembered that in no cases are these tests on the *same* student, taken three years apart; but in all cases they are tests upon different students taken in the same year. Therefore from these nothing can be *proved*, but perhaps a *tendency* may be seen. It suggests that in the beginning of college work we have college girls in a good deal the same general hæmoglobic condition; that in the succeeding two or three years an evolutionary process goes on, and those best suited to a student life show an improvement in their hæmoglobic condition, while those not so well suited show a falling off; finally, that with prolonged study, the student able then to work more wisely, there is a general improvement.

	Twelve first year. Average age, 20.		Twelve undergraduates other than 1st year. Average age, 23.		Sixteen graduates. Average age, 26.	
90+..........	2	17%	4	33%	5	31%
80 to 90........	9	75%	3	25%	6	38%
70 to 80........	1	8%	5	42%	5	31%

Now the question arose as to whether there was any change in the amount of hæmoglobin during the menstrual period, and, if so, whether it was an increase or decrease. A few scattered tests showed variations from the "normal" in either direction, *e. g.*:

Normal.	Menstrual.	Change.
89·2	95·3	+6·1
90·6	75	−15·6
78	87·2	+9·2
97·2	91	−3·2

Evidently it was necessary to see whether there was change from day to day at that period.

Thirteen series of tests on eight individuals were made. These were taken daily at 7 P. M.—nine of them for a week or more, four of them for a month or more. The aim was to cover this period, and, if possible, some time before and after.

Days from beginning of menst.	A	B	Y	Z	Y	F	Y	X	X
	NORMAL.								
	80	79	77	81·2	77	79·5	77	73	73
¼	..	86_7	..	..	..	79_2	..	77_7	69_8
½	..	..	..	..	..	..	..	..	80
1	78_2	..	..	84_4	75_4	.	71_1	..	..
1¼	..	80_3	..	..	..	75_1	..	69	..
1½	..	..	80	..	76_9	..	65_6	..	80_6
2	74_6	..	73	94_9	75_5	..	..	..	..
2¼	..	65_2	..	..	..	85	..	75_4	..
2½	..	..	77_5+	..	67_9	..	74_4	..	70_7
2¾	..	..	..	..	76_3	..	..	..	..
3	79	..	73_6	78_6	70_8+	..	..	..	..
3¼	..	79_4	..	..	..	80_2	..	78	..
3½	..	..	66_2	..	72_7	..	..	..	73_7
4	84	..	..	76_4+	60	..	82_8+	..	..
4¼	..	78_4+	..	..	..	75_8	..	77_1	..
4½	..	..	..	..	..	..	..	..	60_4+
5	79_6	..	78	83_6	65	..	77_7	..	..
5¼	..	70	..	..	..	71_4+	..	72_8+	..
5½	..	..	..	..	..	..	..	..	64_1
6	74_4+	..	..	77_7	79_8	..	79_2	..	..
6¼	..	78	..	..	..	78	..	71	..
7	78_2	..	..	88_3	..	..	72_6	..	..
7¼	..	85	..	..	..	79_6	..	78_4	..
8	82_5	..	..	90_6	..	..	..	..	..
8¼	..	79_9	..	..	..	84_6	..	..	..
9	79_2	..	..	84_4	..	..	..	..	..
10	77_6	..	..	..	..	..	..	..	..
11	75_6	..	..	..	..	..	..	..	..
12	82_8	..	..	..	..	..	..	..	..
13	73_8	..	..	..	..	..	..	..	..

Third day before, 76; second day before, 76; first day before, 66.

The diagram on page 572 shows the tests for the month, at the distances of one day apart, of the four individuals. The menstrual periods are overlined.

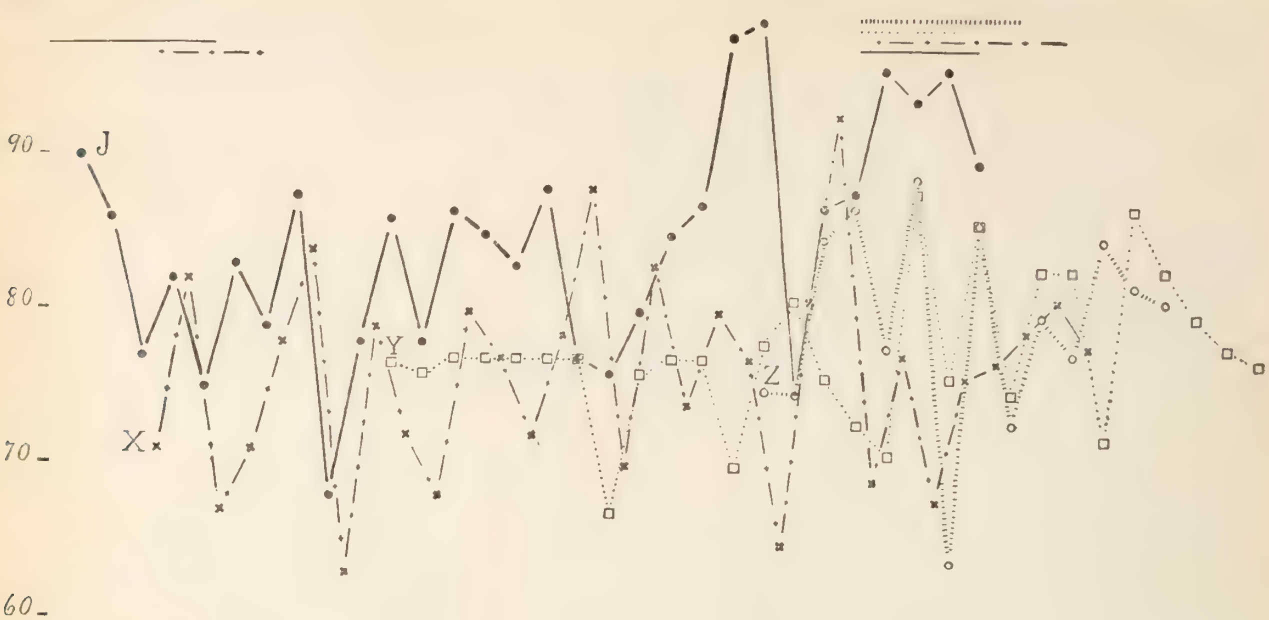
The table shows the readings of the nine series of tests through the week, and compares them with the so-called normal.

The following table places these entire thirteen cases into five time divisions covering the month. The *total variation* of each of these divisions is given for comparison:

Total Variations.

	2½ to 6 days' menstruation.	2 to 7 days after.	6 days' calm.	4 to 5 days following.	3 to 5 days before.	2½ to 6.
J........	15	20	10	11	24	8
X........	15	21	12	18	28	13·1
Y........	17	15	0·5	10	11	....
Z........	25	12	....	....	12	....
Y........	9	19·8	....	....	....	....
Y........	7	11·8	....	....	....	....
A........	9·6	9	....	....	....	....
B........	21·5	15	...	....	....	....
Z........	18·5	12·9	....	....	....	....
G........	17·2	6·6	....	....	....	....
H........	9	7·4	....	....	....	....
F.......	13·6	6·6	....	...	...	....
I........	20·2	....	....	....	....	....

From this important table we see a period in the middle of the month, which we may call the calm, at which the



hæmoglobin shows relatively little variation. During the division following the calm and the one before menstruation we see a gradual greater total variation. In about half the cases this variation reaches its climax during the menstrual period, and in the other half after it is over. In all cases there is much after-variation, gradually settling again into the calm.

Such great changes from day to day suggested variation during one day. Four sets of hourly observations were made on two individuals during the menstrual period, and five sets of hourly observations were made on one individual during comparative calm. The following table gives these figures. In a very general way we may observe two daily declines. Much variation may be seen during the day, and especially during menstruation. Scarcity of data forbids a decisive statement here. (In passing I might remark that plotting of these figures from the normal of Y, given in a table above, shows a rather interesting centering or leveling of these points at about twelve and again at four o'clock. For this I see no explanation.)

Hourly Observations.

	MENSTRUAL PERIOD.				PERIOD OF CALM.				
	Y	Y	Y			Y	Y	Y	Y
8	82_5	..	87_2	..	70	90	85_8	..	73_4
9	84_2	92_2	85_2	..	84_6	87_8	80	90_7	87_5
10	93_4	84_6	77_7	81_2	84_4	90	65_4	83	76_8
11	92_9	83_8	82_5	90	81_8	86_6	75	84_4	79
12	80_3	81_2	86_5	80_4	80_8	86	77	79_2	80
1	80_8	78_4	81	90_2	90_6	85_4	75_5	87	88
2	84_2	68	..	100_3	89	81	78	82_8	77_8
3	80_5	76_9	..	91	84_9	75	77	79_2	77
4	72_8	77_4	87_2	78	80_8	83_1	78_4	72	80
5	70_6	81_4	82_6	89_4	81_2	89_4	..	78_5	70
6	80	75_6	82_5	99_4	78_6	83_1	..	..	79_7
7	87_8	70_8	..	96_4	87	82_8	78	78_5	67_4
8	82_5	77_8	75_8	98_6	84_4	..	..	..	..
9	..	80_4	62	77_7	82_8	80_9	..	78	..
10	..	..	..	..	..	73_5	..	..	..
11	..	..	..	..	..	..	..	78	..

In order to understand certain variations in the above, it is important to know all the conditions of the individual. But first let me say that the following paragraphs give suggestions, tendencies, and not proofs, because of the insufficient amount of data. Different physical states, varying in the amounts of sleep, fresh air, exercise, and exhaustion seemed to make considerable differences in the height of the hæmoglobin. Similarly, mental states of excitement and depression apparently have an effect.

In making a few tests very early in the morning, before the individual was fairly awake, I found the readings to be low—decidedly lower than after stirring about for half an hour, *e. g.*:

Just awake.	Up half an hour.	Normal.
83·8	90·2	77
87·2	99·8	84·7
72·2	91·2	77
77·2	91·2	77

In making tests on individuals after they had been up half an hour (or perhaps had been awake for an hour or two), I obtained readings high when compared with the evening normal, *e. g.*:

Up half an hour.	Normal.	Up half an hour.	Normal.
100·4	80	87·4	77
90·2	77	87·6	77
91·7	77	87·4	77·3
91·2	77	87·1	77·6
99·8	84·7	92·1	82·6
87·1	77		

Tests about an hour later generally showed the hæmoglobin to be still high, but apparently on the first daily decline. In one case, however, the individual took until after breakfast to reach her highest rise. It looks as though it was not until that time that her circulation had got thoroughly stirred up. But it was not possible to take blood-pressure or pulse records as corroborating this idea, *i. e.*:

Just up.	Up half an hour.	Up an hour and a half.
87·2	99·8	101·2
95	89·4	101·2
....	90·7	110

In cases in which the individual had slept badly, the morning test showed a fall from similar tests taken under normal conditions, *e. g.*:

75	instead of	95
70	"	90
83·1	"	92

Fresh air in the room during the night was apparently an important condition toward a high percentage of hæmoglobin.

	Plenty of fresh air.	Close room.
A	100	89
B	91	83

Baths in one case certainly did not increase the record —*i. e.*, 77 compared with the previous 80·6. In other cases gymnasium work followed by baths did keep up the percentage when it would otherwise almost undoubtedly have fallen, *e. g.*:

	3 P. M.	4 P. M.
A	97·6	97·6
B	84·4	83·2

Exercise out of doors showed a keeping up or increase where otherwise there would almost surely have been a fall of hæmoglobin, *e. g.*:

3 P. M.	4 P. M.	3 P. M.	4 P. M.
77·8	77	83·7	99·4
83·7	83·2	79	92·8
88·2	88·8	70	90·2
75·4	82·8		

The foregoing were cases in which the exercise was not excessive and the individual felt refreshed. Too much exercise, causing exhaustion, gave readings as follows: Before, 80; after, 70.

In cases of physical weariness the readings dropped below the normal at that time, *e. g.*:

7 P. M.	7 P. M., Normal.
72·6	77
70·2	77
66·4	77
63·2	77

Several cases of mental excitement showed perhaps an increase. Yet after a very violent discussion one case showed no increase.

7 P. M., Mental excitement.	7 P. M., Normal.
87·2	84
92·8	79
81·4	78
78	78

Two cases in which the subject was much depressed mentally gave readings as follows:

7 P. M., Depressed.	7 P. M., Normal.
57	78
65	78

It is, however, difficult to connect this illusive subjective matter with objective data.

How can the great differences seen often from hour to hour be explained? Can there be a question of inhibition? Can they be due to the differences in the flow of lymph to the spot on pricking the finger? There is apparently some action more or less under nervous control by which there is a decreasing of the red corpuscles in proportion to the fluid. The locality tested is purely arbitrary; it is perfectly safe for comparative work, but does not give the same reading as would be obtained from other parts of the body, *e. g.*:

Hand	85
Chest, same day and hour	97·5
Hand	77
Foot, same day and hour	67

Finally, we must conclude that the hæmoglobin is a variable, and that tests are of value only when used comparatively. A physician might easily take a test at four or five o'clock in the afternoon, and, getting a reading of 65, might pronounce his patient anæmic, whereas if he had made the test three or four hours earlier—say at one o'clock—and obtained a reading of 85, he would have pronounced the hæmoglobin in good condition. Great exhaustion, great mental depression, and especially menstruation, might also lead him to mistake the true state of the blood. Therefore we clearly see that no practitioner would be in the least justified, without other evidence, in relying or putting any stress at all upon a low hæmoglobin reading unless it were properly corroborated.

THE TREATMENT OF CLUB-FOOT BY CONTINUOUS LEVERAGE.*

By HENRY LING TAYLOR, M.D.

In a paper written for this association and published in its *Transactions* for 1889, and in the *Medical Record* (March 8, 1890), the writer described and advocated a method of treating pes equino-varus by leverage continuously applied in such a manner as to progressively unfold and remold the deformed foot. The following practical points in the treatment were emphasized:

1. The preservation of the heel cord as an aid in unfolding the foot.
2. The reduction of the varus deformity first, afterward of the equinus.
3. Exact prehension of the foot by means of an apparatus not attached to the shoe, and by adhesive plaster applied to the leg.
4. The application of leverage to the inner side of the foot and leg.

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* Read before the American Orthopædic Association, New York, September 21, 1892.

5. Thorough mechanical after-treatment.

If in equino-varus the deformed member is viewed from behind, the foot and leg are seen to constitute an irregular curve with the concavity inward. The plan is to efface this curve and throw the foot into the valgus position by applying a lever to the inner side of the foot and leg, where it can act most directly and efficiently. In the case of an infant this can readily be done by means of a wooden splint or light strip of metal, padded, and bent somewhat less than the curve to be acted upon, and securely strapped at the ends to the fore part of the foot and to the leg below the knee, while the ankle is drawn toward this lever by a third strap placed a little above that joint. As the foot yields to the leverage thus applied, the lever is straightened and the process is continued until complete eversion of the foot is obtained. After the original curve formed by the inner border of the limb has been considerably reduced by this process, the anterior part of the foot is turned outward and in place of the single inner concavity we have two—the upper, formed by the os calcis with the tibia; the lower, by the os calcis with the metatarsus. The exaggerated concavity of the sole forms a third abnormal curve. When this stage is reached the splint should be well padded opposite the os calcis, so as to engage it and pry it over into place, since the position of the os calcis is finally the key to the situation. No effort has been made up to this point to correct the equinus element of the deformity. "In equino-varus the tendo Achillis is inserted toward the inner side of the tuberosity of the os calcis, and the inner border of the tendon is shorter than the outer; by forcing the foot out and the os calcis over, it is stretched fiber by fiber, as when we tear a bandage from the tense edge, and when the valgus position is established the resistance is diminished." After overcorrection of the varus element, the tendo Achillis may be divided and the foot flexed; but in most cases it may preferably be stretched by turning the set screw at the ankle joint of the apparatus soon to be mentioned. Up to this point all ordinary cases can be successfully treated by means of a simple home-made splint, if only the principles above outlined are carefully followed; but so soon as the deformity has been sufficiently reduced to permit the patient to place his sole squarely on the ground, he will need a retentive apparatus which will hold his foot until the tissues are stable in the corrected position and there is no tendency to the return of the deformity.

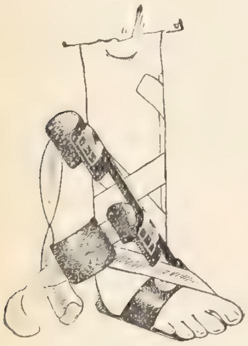

FIG. 1.

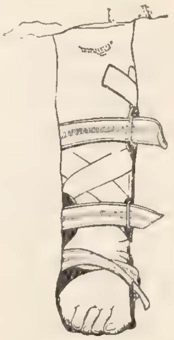

FIG. 2.

As a matter of convenience I am in the habit of applying leverage in these cases, both to reduce the deformity and to hold the foot in the corrected position, by means of a steel apparatus, the usual form of which is shown in Figs. 1 and 2, and which has previously been sufficiently described.*

This apparatus is at first adjusted to the deformed position of the foot by bending the steel shank near the ankle. It is worn day and night, is frequently readjusted, and, when necessary, the leverage is increased by straightening at the shank, so that a moderate corrective force is continuously exerted against the abnormal curves. All strapping is carefully guarded from harmful constriction, while precision of action is much increased by the use of a three-tailed adhesive plaster applied to the leg, and ending in a strip of webbing which is buckled to the side plate of the apparatus near the heel (Figs. 3 and 4), and which gives perfect control of the foot by keeping the heel in contact with the sole plate of the apparatus. It will be seen from the foregoing analysis of the abnormal curves in this affection and an inspection of the apparatus and model shown, that each abnormal curve is continuously acted upon by a corrective leverage controllable by the operator. The proximal curve formed by the os calcis with the tibia is counteracted by the lever formed by the leg bar and heel end of the side plate, and completed by the strap above the ankle. The distal curve formed by the os calcis with the metatarsus at the inner side of the foot is counteracted by the ends of the side plate, whose leverage is completed by the band passing over the cuboid and top of the arch of the foot, while the plantar curve is corrected by the same band acting with the sole plate of the apparatus.

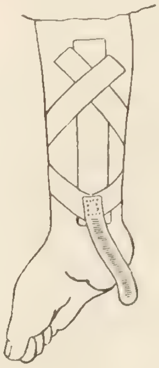

FIG. 3.

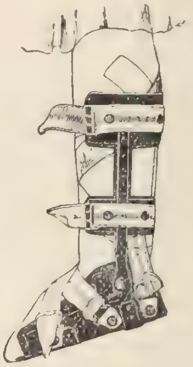

FIG. 4.

When the deformity has been so far overcome as to enable the patient to place the sole squarely on the ground, walking with the splint properly applied will help the patient, since the weight of the body under these circumstances will assist the corrective leverage. It is just at this point that so many failures have occurred in the treatment of congenital equino-varus. The original deformity has been wholly or partially corrected by mechanical means or operative procedures, and the patient is soon permitted to walk about. But as the muscles and ligaments on the long or convex side of the limb have not yet had time to shorten and grow firm, they are not able to oppose so much resistance to the forces which act upon the foot in walking and other movements as the tissues on the inner or concave side. In addition to this, the bones of the foot are imperfectly adapted to their new position, since their relations were developed in quite a different one—namely, the equino-varus position. So, there being no adequate force to oppose it, the foot gradually slips back toward the original faulty position. Repeated operations on the concave side and the adaptation of apparatus which imperfectly grasps the foot and allows it to slip and turn will not meet the difficulty. The deficient forces must be supplied by the exact prehension of the foot, and the continuous application of leverage in such a manner that the foot shall always be held in a slightly overcorrected position until the previously overstretched and elongated tissues are solidified. It will thus be seen that it is quite as important to have complete command of the corrected foot as it is to effect the reduction of the deformity, and any operation or process which only aims to reduce the deformity must be regarded as but an incident in the treatment. In most cases under six or eight years of age, and in many older subjects, the deformity can be reduced within a few weeks* by the method of continuous leverage, which, besides rendering operative procedures unnecessary, presents the additional advantage of molding the tissues of the foot into normal relations by a proper distribution of pressure. The foot is then to be held in its corrected position from one to several years, while the patient is seen only occasionally by the physician, has full liberty and goes about independently in his brace, which is concealed by his shoe and stocking.

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* *Loc. cit.*

The form of the apparatus must be modified to meet special indications in particular cases. Inversion at the knee may be controlled by an apparatus reaching to the hip, and if necessary the addition of a hip-band will regulate hip rotation.

In secondary cases following poliomyelitis the same principle of treatment is employed, with proper provision for protecting weak muscles by limiting motion at the ankle joint. Such cases can often be successfully treated even after full growth is attained, and tenotomy is seldom necessary. In the deformities following the cerebral palsies and associated with a spastic condition of the muscles, tenotomy is positively indicated in addition to mechanical treatment, since the spasm is seldom or never permanently overcome by stretching.

The treatment of the valgus deformity, which is usually more difficult than that of varus, is analogous in principle. Leverage is applied to the outer side of the foot and leg by means of an apparatus similar to that employed in varus, but reversed in its action.

The simple equinus deformity may often be reduced by stretching, but very severe cases are more appropriate for tenotomy of the heel-cord than other deformities, since the relations of the small bones of the foot are not seriously disturbed. The mechanical after-treatment must be attended to to prevent relapse or overcorrection.

In calcaneus, ankle flexion is prevented by a stop at the ankle joint of the apparatus, while the weight of the body in standing and walking is transmitted from the anterior end of the sole plate through the apparatus to a broad band passing in front of the head of the tibia.

In concluding, I would draw special attention to the fact that the cases of congenital deformity which have been discussed are readily curable in early childhood by mechanical means alone, while the foot deformities due to poliomyelitis, the commonest cause of secondary clubfoot, are preventable by correct mechanical treatment, applied early in the affection, so that recourse to operative procedures at a later stage is evidence of neglect of simpler and more perfect means at an earlier period.

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* Within a fortnight I began the treatment by continuous leverage of the right foot of a boy of two years, born with an equino-varus, which had resisted doctors and braces, including a "Taylor" brace; the boy continued to walk on the outer side of the foot. In one week's time, with four office visits, and without violence or discomfort, the foot was in the valgus position and the child walking on his sole, to his mother's infinite astonishment. Such results can be accomplished with certainty, though not always so rapidly, when correct principles of treatment are carried out with painstaking precision of detail.

DISEASES OF THE FRONTAL SINUS.*

By D. N. RANKIN, A. M., M. D,
ALLEGHENY, PA.

By a perusal of the various works on rhinology, you will observe that the diseases of the frontal sinus do not receive that attention they deserve. In my opinion, they are frequently the prime cause of serious, and oftentimes incurable, diseases of the nares; and, *vice versa*, very troublesome and painful affections of this locality often result from neglecting slight and curable diseases of the nose. Indeed, the diseases of this accessory sinus of the nose require more prompt treatment in their early stages than those of the antrum highmorianum, owing to the fact of its close proximity to the brain, there being only a thin bony plate between the sinus and brain proper. In the infant at birth there is no trace of the frontal sinuses. They begin to make their appearance between the second and third year, when they are merely enlarged cells in the diploe. They are not fully developed until puberty, when they consist of two cavities often of a different size, the left being commonly the larger, and varying in size in different persons, being larger in men than in women, which sometimes communicate with one another, though not always, but always with the nasal cavities by a separate foramen in each, which opens into the middle meatus of the nose through the anterior ethmoidal cells.

As stated by Sir W. Hamilton, the sinuses are rarely, if ever, wanting in any healthy adult head of either sex. Out of three hundred crania which he examined, he could not find one in which the sinus was completely absent.

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* Read before the American Laryngological Association at its fourteenth annual congress.

The development of these sinuses is usually the result of the receding of the outer and inner tables of the bone from each other. The absence of the bumps, even in middle age, does not necessarily imply the absence of the sinuses, since they may be formed by a retrocession of the inner wall of the skull. In old persons, as a rule, when the sinuses enlarge, it is by encroachment of the inner table on the brain case. Therefore an elderly person may have a large frontal sinus without any external indication of it. On the other hand, a prominent bump does not necessarily imply the existence of a large sinus, or indeed of a small one. The bump may be a mere thickening of the bone. Anatomists inform us that these cavities are lined throughout by mucous membrane, which is continuous with the pituitary membrane lining the nasal cavities, but it differs from the latter in being denser in its texture and paler in color, as well as being smoother and more highly polished. As there is no trace of these sinuses at birth, the membrane which lines the frontal sinuses, although it is considered to be a continuation of the pituitary membrane, would appear to be developed subsequently to it, as it differs from it, not only in appearance, but in its liability to disease, as diseases of the sinuses are rather more rare than those of the mucous membrane of the nasal cavities. The most important affections of this locality are inflammation, simple and specific, foreign bodies, including insects and worms, polyps, earthy concretions, hydatids, and encephaloid. Simple inflammation of the frontal sinuses may be caused by an external injury, as a blow on the forehead and gunshot wounds immediately over the sinuses. One case from the latter cause I have had under my care, which, with your permission, I will fully report:

C. H. P., white, aged thirty-four years, came under my care in the fall of 1864 for the relief of a severe pain in the frontal sinus, with great tenderness and puffiness over the part. The only thing to be seen was a cicatrix from a gunshot wound. Wishing to get a history of the case, he related the following:

Was regularly enlisted in the United States Army during the late war. While in the rear of Petersburg, Va., was struck upon the forehead immediately over the frontal sinus by a spent Minié ball and lay for some hours upon the ground in an insensible condition before reaction supervened; was then carried to the Cavalry Corps Hospital, City Point, Va., where the proper attention was received and was detained until the wound healed, there being no injury to the bone perceptible, but still continued to suffer from a deep-seated pain—deep in the bone, as he described it. In this condition he deserted from the hospital, as he was expecting at any moment to be sent to the front. After his desertion he came to Pittsburgh, when he came under my care for the relief of this terrible pain in his forehead. I questioned him carefully as to ever having any specific disease; he most positively denied it. In order to satisfy my own mind, I examined him very carefully, and came to the conclusion he was telling me the truth. The usual remedies were given him without any beneficial effect whatever. Acting under the impression that the injury he had received from the gunshot wound produced inflammation of the membranes lining the frontal sinuses and resulting in the suppuration of that cavity, and there being no hope for an exit through the natural outlet, I deemed it most prudent to open the sinus by trephining, which I did, and was delighted to see more than a tablespoonful of healthy pus exude therefrom, which immediately gave him relief. The cavity was washed out with an antiseptic solution, the crucial flesh wound healed kindly, and he was discharged a happy man. He has written to me several times since, and stated that he has had no return of the trouble.

A few instances are given in some of the older works on surgery of the lodgment of balls in the frontal sinuses caused by gunshot wounds, and also where the end of a knife blade or scissors and the sharp end of a metal fence paling, broken off in its passage through the skull, have been found in this locality. Some cases, and they are not a few, are also upon record of inflammation ending in abscess in the frontal sinuses, independent of injury, in which the pus either made its way into the nose and so escaped, or was retained and gave rise to a train of severe and distressing symptoms.

Tertiary syphilis often attacks these cavities; the symptoms are a sense of weight and fullness, an erysipelatous blush, a heavy aching pain extending along the eyebrows, and the other usual symptoms attending a severe form of coryza.

How often are we called upon to visit a patient who has taken a severe cold and is suffering from a most violent pain in this locality, with chill and high temperature! Any one of us who has seen many cases of *la grippe*, so recently and prominently brought to our notice, could not help but notice the involvement of this locality, the great pain and tenderness in the frontal sinuses, and as soon as we were able, by our remedies, to get a free discharge from the sinuses *via* the nostrils, the patient would immediately get relief, especially from this one violent symptom. But in one instance it was not my good fortune to secure the desired discharge; this case I deem of sufficient interest to report to this association.

On March 30, 1889, J. L., white, aged thirty-two years, hurriedly summoned me to his residence, where I found him suffering most agonizing pain, especially over the frontal sinuses. I was informed that two days before he had taken a severe cold, came to his home, took a severe chill, followed by high fever and excruciating pain in the forehead. I at once surmised the trouble. To relieve his severe pain, a hypodermic injection of morphine was given him, which had the effect of moderating the pain somewhat; but his relief was only temporary, for as soon as the effects of the anodyne had worn off the pain was as excruciating as before the injection was given, if not more so. He was then prescribed phenacetine and salol, followed by a thoroughly antiphlogistic treatment, as salines, aconite, leeching, blistering, etc., but all to no decided good effects. I then commenced poulticing in the hope that whatever pus might be collected in the sinuses would become thinner and pass down through the nostrils. This had no better effect than the preceding treatment. The case becoming worse, with the other symptoms becoming aggravated, some delirium appeared. As every other means had been used to no good effect, I decided to open the outer table by trephining, which I did, giving the man immediate relief; about half an ounce of healthy pus escaped, and, upon examination, was pleased to find the inner table in a healthy condition, no necrosis having occurred, which I feared greatly, owing to the thinness of the bone.

Professor V. Coszolino gives, in the *Annales des mal. de l'oreille, du larynx*, etc., December, 1891, a description of the instruments and methods which he uses in treating suppurations of these sinuses: "In probing the frontal sinus, the point of a curved probe is passed between the external wall and the anterior end of the middle turbinated upward and forward. The probe will be known to be in the sinus by its direction and by the fact that its end is more than five centimetres from the floor of the nostrils. Great care must be used in treating the ethmoidal sinuses, because of their proximity to the brain. An instrument with a pen-shaped end is used in opening these sinuses. The treatment in all cases consists of giving a free opening and antiseptic washing."

Viallet and Rouger report having met with a case in which a polyp of the frontal sinus was associated with an exostosis of this cavity. Langenbeck and Brume report a case of hydatids in the frontal sinus as follows: "The tumor, during the progress of its development, encroached upon the forehead and roof of the orbit, pushing the eye forward and downward."

Robert Keate, in 1819, published in the tenth volume of the *London Medico-chirurgical Transactions* the particulars of a case of hydatids of the frontal bone in a girl eighteen years old, but the tumor seems to have been developed in the areolar tissue and not in the sinus, which, however, became accidentally involved during the progress of the disease.

Professor Samuel D. Gross states that encephaloid of the frontal sinus is probably more common than is generally imagined, but in his extensive surgical experience he has seen only one case of it. "The patient was a gentleman upward of sixty years of age who, twelve months previously, had been seized, without assignable cause, with what he supposed to be an attack of erysipelas of the forehead and face. On recovering from this, he noticed an unusual fullness over the left eyebrow attended with great hardness and excessive pain. The lids continued to swell and the left nostril by degrees became obstructed and the seat of a thin sanious discharge, more or less profuse, and at times quite fœtid. At length several openings formed upon the most prominent part of the tumor, giving vent to thick yellowish pus, and readily admitting of the passage of a probe into the nose. Upon enlarging these openings the sinus was found to be occupied by a soft fungous mass, the overlying bone being softened and disintegrated. The morbid growth presented all the characteristics, physically and microscopically, of encephaloid. The patient died in a few weeks completely exhausted."

Fraenkel, in von Ziemssen's *Cyclopædia*, states that "we have trustworthy observations confirming the existence within the frontal sinuses of centipedes, where they may remain for years, the secretions of the cavities furnishing them with sufficient nourishment." It is reliably reported (*Medical Times*, 1876) that larvæ have been found in the sinuses, and maggots that have developed within the nose have managed to make their way to the frontal sinuses. A case is reported where epistaxis, extending over many years, was due to an insect—the *Pentastoma tænioides*—that had settled in these sinuses. One day it was sneezed out, and no further bleeding occurred.

THE
NEW YORK MEDICAL JOURNAL,
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NEW YORK, SATURDAY, NOVEMBER 19, 1892.

THE SURGICAL TREATMENT OF GENERAL PARESIS OF THE INSANE.

An examination of the statistics of many insane asylums for the past ten years shows a steady increase in the number of persons affected with general paresis that are admitted for treatment; and more than twenty-five per cent. of the deaths in these institutions are caused by this disease. This increase of general paresis and the high mortality from it naturally stimulate investigation regarding the possibility of discovering some satisfactory method of treatment. Various remedial measures have been tried, with more or less satisfaction to their proposers, but the progress of the disease has been only temporarily arrested at best.

General paresis is a disease of the brain cortex, chiefly limited to the fronto-parietal areas on the vertex. The researches of Goltz, Ferrier, and Ross have shown that these areas are chiefly concerned in the higher mental processes, so the disease is manifested by mental and motor disturbances. Clouston, Bevan Lewis, Savage, and Mickle think that there is a degeneration of the nerve elements of the cortex caused by a transfusion of the fluid contents of the cortical arteries into the circumvascular canals and thence into the pia-arachnoid spaces into which these canals open. Because of this vascular inflammation of cortical areas, causing an interference with nerve-cell nutrition, and the exudation of an abnormal fluid causing pressure on the brain, surgical interference has been attempted to afford relief to this tension.

Dr. T. Claye Shawe was the first to report relief from this operative procedure, and he published in the *British Medical Journal* for November 16, 1889, an account of a case of general paresis in which an aperture an inch and a half long by three quarters of an inch wide was made in the right side of the skull over the central sulcus. The operation was performed on July 28, 1889, by Mr. Cripps, and the patient was up on the tenth day. The mental improvement was immediate and decided. This improvement continued, but the motor paretic symptoms did not improve, although there was no recurrence of convulsions until six months after the operation, when the patient died in a convulsive attack. A second patient was operated on some months later, and there was subsequent temporary improvement in the mental condition, but none in the motor symptoms.

It often happens that the same idea strikes different observers at the same time, and Dr. J. Batty Tuke reported in the *British Medical Journal* for January 4, 1890, a case of general paresis under his care in which an operation had been done on May 17, 1889. In this patient also the mental condition was temporarily improved, though subsequently his original symptoms recurred.

More recently Mr. John Macpherson and Mr. David Wallace have reported in the same journal for July 23, 1892, five cases of general paralysis in which partial craniectomy was performed. In three cases the left side of the skull was opened, and in one case a bilateral bony excision was performed. Surgically the cases progressed uninterruptedly to recovery, and in all the cases except one there was an improvement in the mental symptoms that lasted from a week to three weeks. The authors think that the relief of pressure by the removal of the fluid, as well as the greater freedom for cerebral expansion and pulsation resulting from the removal of the bone, combined to produce the change they noted. As the scalp cicatrized, and the osseous aperture became filled with fibrous tissue, the patient's mental condition gradually reverted to what it had been before the operation. They think that the operation is indicated in the early stages of the disease in order to be of material benefit.

Dr. C. G. Wagner has reported in the *American Journal of Insanity* for July, 1890, a case in this country, in which he operated on a patient in an advanced state of general paresis. The operation was followed by a marked improvement in the patient's condition that persisted for several weeks.

From these nine cases, which, we think, comprise all that have been reported, it is seen that the operation was followed by a more or less protracted improvement in the patient's condition. This does not seem to us to be entirely attributable to the impression of the operation *per se*, but rather to the relief of the existing condition that tends by its perpetuation to cause complete degeneration of the nerve cells. The operation in skilled hands has not resulted in any untoward symptom, and a resort to it, especially in the early stages of the disease, with subsequent treatment, may afford more permanent relief.

POISONING BY ACETANILIDE.

In the *Lancet* for September 10th there is an abstract of a report published in *Hygeia*, by Dr. W. Warfvinge, of two cases of acetanilide poisoning. In the first case, that of a man aged thirty-five years, two drachms of acetanilide were taken one morning, and in a few minutes he felt fatigued, he experienced a sense of weight in his head, and black and red clouds appeared before his eyes. He slept for more than an hour, was easily aroused, understood everything, but if he attempted to arise felt giddy, staggered a few steps, and fell down unconscious. He soon sank into a comatose condition, with closed eyes, well-marked cyanosis, relaxed muscles, coldness of the hands and feet, decreased temperature, moderate diaphoresis, and a lowering of the respiration and pulse. Hypodermic injections of camphor and ether improved the latter conditions, but the comatose state continued for sixteen hours, though in twenty-four hours only frontal headache and cyanosis remained. The latter persisted for three days. The urine was clear and deep-colored, and contained much indican, but no blood, albumin, or sugar. The temperature varied from 97·7° to 101·12°.

The second patient, a girl of fifteen, had taken nearly half an ounce of acetanilide, and presented symptoms similar to those of the first case. Her temperature ranged from 96·8° to normal. Vomiting came on after her admission into the hospital, and the comatose condition lasted only seven hours and a half. Her stomach was washed out within an hour after she had taken the drug.

MINOR PARAGRAPHS.

RHACHITIC PSEUDO-PARALYSIS.

This was the subject of a paper read by Dr. Samuel Ketch at a meeting of the Section in Orthopædic Surgery of the New York Academy of Medicine held on October 21st. The author dwelt particularly on the importance of recognizing this condition, and gave its distinguishing points as contrasted with infantile paralysis and the paraplegia of Pott's disease, with which it was most frequently confounded. He mentioned many other conditions which this condition resembled and which it had been mistaken for, such as spastic paralysis, post-diphtheritic paralysis, and even pseudo-hypertrophic paralysis. The clinical features were given, and corroborated those already described in Dr. H. W. Berg's paper, read before the section some years ago, which the author thought had not been sufficiently appreciated by the general practitioner. The question of the occurrence of deformity with this pseudo-palsy was brought out. The author thought that in many cases there was no deformity, as the children had never walked and the superincumbent weight had not acted as a factor in the production of bowlegs and knock-knee. He had observed cases, however, with deformity. Some of these were probably cases of "fœtal rhachitis," and some cases in which the muscular condition came on after the child had already walked. As to treatment, he advised, primarily, regulation of the diet, baths, and general hygiene. Medicinally, stress was placed on the use of phosphorus. Locally, electricity, massage, and inunctions with cod-liver oil were recommended. The question of the use of braces was gone into thoroughly, and the author was of the opinion that their use was unjustifiable while the muscular weakness remained. He preferred to wait until a later period, when, should deformity be present, it could be remedied either by mechanical or by operative means.

RAGS AND THE IMPORTATION OF CHOLERA.

In 1885 Dr. T. H. Squire read before the Elmira, N. Y., Academy of Medicine a paper on Asiatic Cholera. Dr. Squire has kindly sent us a printed copy of his paper, calling attention to a passage in which, speaking of a vessel that had been sixteen days at sea when a case of cholera appeared on board, he said:

"A day or two before this she had encountered very cold weather, and 'there was a great overhauling of baggage for warm clothing.' It was proved that one of the passengers had thus brought to light clothing that had belonged to an individual who had died in Germany of cholera, and the persons who wore this clothing on the ship were the first to die. The ship arrived at quarantine, New York, on the 1st of December, with eleven cholera cases on board. They were taken to the quarantine hospital, while the rest of the passengers *were scattered over the city of New York and over the United States, carrying with them in all directions the deadly infection.* Here are two instances, and scores more might be added, giving proof that the virus of cholera may adhere to clothing, be packed away in close trunks, and carried to distant regions, where, the articles being handled and worn weeks and months afterward, it will manifest all its deadly power and be the means of spreading the disease over wide sections of country."

A DEMONSTRATION OF THE CHOLERA BACILLUS.

At a meeting of the Section in General Medicine of the New York Academy of Medicine, held on Tuesday evening of this week, Dr. E. K. Dunham gave a most interesting demonstration of the comma bacillus of Asiatic cholera. Tube cultures and plate colonies of the organism were projected upon the screen, and their morphological and biological characters pointed out. The bacilli themselves were shown under the microscope, both alive in a drop of the culture fluid, and also stained by the ordinary methods. Photomicrographs of the latter were also shown by means of the dark lantern. The cultures had been made in the usual way from the dejecta obtained from the nine cases of cholera recently observed in New York. In two of the cases cover-glasses, prepared directly from the intestinal contents, showed the characteristic germ. In the seven other cases cultures had been required before the bacillus was found. Cultures from some of these cases had been sent to Dr. Petri, director of the bacteriological department of the Imperial Board of Health at Berlin, and a letter in reply had been received from Dr. Petri stating that he could detect no difference between Dr. Dunham's cultures and those made from the cases in Hamburg.

THE ULTIMATE RESULTS OF REMOVAL OF THE UTERUS.

Dr. Charles A. L. Reed, of Cincinnati, presented to the recent meeting of the American Association of Obstetricians and Gynæcologists a report of twenty-five cases of complete vaginal removal of the uterus for cancer, with only two primary deaths—one from shock and one from iodoform poisoning. Of the twenty-five cases, but fourteen were of more than two years' standing, and hence were all that could be discussed with reference to their ultimate results. These fourteen were divisible into two classes of seven each—viz., those in which the disease had existed for more than six months before the operation, and those in which it had existed for less than six months before the operation. Of the first class—*i. e.*, those of more than six months' (an average of over ten months') previous duration—all had ended fatally; of the second class—*i. e.*, those of less than six months' (an average of over four months') previous duration—only one had since ended fatally. One of the recoveries was of more than five years' duration. The conclusion from these figures is that patients with cancer of the uterus ought to be subjected to operation as soon as the disease is diagnosticated. Dr. Reed looks upon total removal as the only operation to be advised or practiced in these cases, the primary mortality from which, in experienced hands, varies from five to eight per cent.

BIOLOGICAL COURSES IN COLUMBIA COLLEGE.

The courses of lectures in biology, given in room No. 11 of the library building, began on the 10th inst. with the first lecture in Professor Henry F. Osborn's course on The History of the Theory of Evolution. This course is to be followed by one on The Cellular Basis of Heredity and Development, by Edmund B. Wilson, Ph. D., adjunct professor of biology; one on The Origin and Evolution of the Fishes, by Bashford Dean, Ph. D., instructor in biology; and one on Amphioxus and Other Ancestors of the Vertebrates, by Arthur Willey, B. Sc., tutor in biology.

THE PAN-AMERICAN MEDICAL CONGRESS.

The preliminary announcement, a pamphlet of sixty-four large pages, gives the organization of the congress and its sections, the regulations, and the plan of registration. Considerable expense has had to be incurred already, and it must be met out of the proceeds of advance registration fees. It is to be hoped, therefore, that members of the profession who intend to take part in the proceedings will communicate promptly with the treasurer, Dr. A. M. Owen, of Evansville, Indiana.

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending November 15, 1892:

DISEASES.	Week ending Nov. 9.		Week ending Nov. 15.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	0	0	0	0
Typhoid fever	30	10	27	7
Scarlet fever	84	7	86	5
Cerebro-spinal meningitis	2	0	0	2
Measles	57	7	41	3
Diphtheria	110	28	90	27
Small-pox	6	1	5	0

The Samuel D. Gross Prize of the Philadelphia Academy of Surgery.—The first quinquennial prize of one thousand dollars under the will of the late Samuel D. Gross, M. D., will be awarded in 1893. The conditions annexed by the testator are that the prize "Shall be awarded every five years to the writer of the best original essay, not exceeding one hundred and fifty printed pages, octavo, in length, illustrative of some subject in surgical pathology or surgical practice, founded upon original investigations, the candidates for the prize to be American citizens." It is expressly stipulated that the successful competitor shall publish his essay in book form, and that he shall deposit one copy of the work in the Samuel D. Gross Library of the Philadelphia Academy of Surgery. The essays, which must be written in the English language, should be sent to Dr. J. Ewing Mears, 1429 Walnut Street, Philadelphia, before June 1, 1893. Each essay must be distinguished by a motto and accompanied by a sealed envelope bearing the same motto, containing the name and address of the writer. No envelope will be opened except that which accompanies the successful essay. The committee will return the unsuccessful essays if reclaimed by their respective writers, or their agents, within one year. The committee reserves the right to make no award if the essays submitted are not considered worthy of the prize.

The Eleventh International Medical Congress.—Dr. A. Jacobi announces that the American subcommittee has the following membership: Dr. W. T. Briggs, of Nashville; Dr. H. P. Bowditch, of Boston; Dr. S. C. Busey, of Washington; Dr. C. Cushing, of San Francisco; Dr. N. S. Davis, of Chicago; Dr. A. Jacobi, of New York (chairman); Dr. Norman W. Kingsley, of New York; Dr. William Osler, of Baltimore; Dr. William Pepper, of Philadelphia; Dr. F. Peyre Porcher, of Charleston; Dr. Charles A. L. Reed, of Cincinnati; Dr. D. B. St. John Roosa, of New York; Dr. A. J. C. Skene, of Brooklyn; and Dr. James Stewart, of Montreal. The secretary general informs the committee that the French Railway Company has offered to the members of the congress a reduction of fifty per cent. on its fare.

The Wesley M. Carpenter Lecture will be given at the New York Academy of Medicine on Tuesday evening, the 22d inst., at eight o'clock, by Dr. J. J. Kinyoun, of the Marine-Hospital Service, on the subject of The Modern Treatment of the Infected Vessel. Members of the medical profession are invited to be present.

The Death of Dr. A. Reeves Jackson, of Chicago, took place on Saturday, the 12th inst. The deceased, who was sixty-five years old, was favorably known as a gynæcologist and highly esteemed as a man. He was president of the faculty of the College of Physicians and Surgeons of Chicago, and had been surgeon in chief of the Woman's Hospital of the State of Illinois. He was a member of the American Gynæcological Society, of which he was president for the year 1890-'91. His death is said to have been due to apoplexy.

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from October 30 to November 12, 1892:*

Birmingham, Henry P., Captain and Assistant Surgeon. The leave of absence granted is hereby extended one month.

McVay, Harlan E., First Lieutenant and Assistant Surgeon, will proceed from Fort Wingate, New Mexico, to the camp south of Bisbee, Arizona Territory, and report to Lieutenant-Colonel J. W. Barlow, corps of engineers, Commissioner of International Boundary Line Survey, for duty, relieving Mearns, E. A., Captain and Assistant Surgeon.

Promotion.

Jarvis, Nathan S., First Lieutenant and Assistant Surgeon, to be Assistant Surgeon, with the rank of Captain, October 14, 1892, after five years' service, in accordance with Act of June 23, 1874.

Brown, Justus M., Major and Surgeon, is granted leave of absence for four months, with permission to apply for an extension of two months.

Swift, Eugene L., Captain and Assistant Surgeon, is granted leave of absence for one month, to take effect upon expiration of present sick leave.

Marine-Hospital Service.—*Official List of the Changes of Stations and Duties of Medical Officers of the United States Marine-Hospital Service for the three weeks ending October 15, 1892:*

Purviance, George, Surgeon. Granted leave of absence for seven days. October 12, 1892.

Banks, C. E., Passed Assistant Surgeon. To rejoin station at Portland, Me. October 14, 1892.

Devan, S. C., Passed Assistant Surgeon. Ordered to Washington, D. C., for special duty. September 29, 1892.

Kalloch, P. C., Passed Assistant Surgeon. To rejoin station at Boston, Mass. October 14, 1892.

Wasdin, Eugene, Passed Assistant Surgeon. To rejoin station at Charleston, S. C. October 3, 1892.

McIntosh, W. P., Passed Assistant Surgeon. To proceed to Buffalo, N. Y., for temporary duty. September 25, 1892. To proceed to Ellis Island for temporary duty. September 30, 1892. To report in person to the Supervising Surgeon-General. October 8, 1892. To rejoin station at New Orleans, La. October 10, 1892.

Pettus, W. J., Passed Assistant Surgeon. To proceed to New York, N. Y., for temporary duty. September 25, 1892.

Magruder, G. M., Passed Assistant Surgeon. To proceed to Tacoma, Wash., for special duty. October 7, 1892.

Cobb, J. O., Passed Assistant Surgeon. To rejoin station at Detroit, Mich. October 7, 1892.

Stoner, J. B., Passed Assistant Surgeon. To rejoin station at Pittsburgh, Pa. October 3, 1892. Granted leave of absence for seven days. October 4, 1892.

Rosenau, M. J., Assistant Surgeon. Relieved from duty at Cape Charles Quarantine. October 11, 1892. Granted leave of absence for thirty days. October 13, 1892.

Cofer, L. E., Assistant Surgeon. Granted leave of absence for three months on account of sickness. October 15, 1892.

Gardner, C. H., Assistant Surgeon. To report to the medical officer in command, San Francisco, Cal., for duty. October 12, 1892.

Society Meetings for the Coming Week:

Monday, *November 21st:* New York Academy of Medicine (Section in Ophthalmology and Otology); New York County Medical Association; Hartford, Conn., Medical Society; Chicago Medical Society.

Tuesday, *November 22d:* New York Academy of Medicine (Section in Laryngology and Rhinology); New York Dermatological Society; New York Otological Society (private); Buffalo Obstetrical Society.

Wednesday, *November 23d:* New York Surgical Society; New York Pathological Society; Metropolitan Medical Society (private); American Microscopical Society of the City of New York; Medical Society of the County of Albany; Philadelphia County Medical Society.

Thursday, *November 24th:* New York Academy of Medicine (Section in Obstetrics and Gynæcology); New York Orthopædic Society; Brooklyn Pathological Society; Roxbury, Mass., Society for Medical Improvement (private).

Friday, *November 25th:* Yorkville Medical Association (private); New York Society of German Physicians; New York Clinical Society (private); Philadelphia Clinical Society; Philadelphia Laryngological Society.

Saturday, *November 26th:* New York Medical and Surgical Society (private).

Answers to Correspondents:

No. 387.—See Bergeret, *The Preventive Obstacle, or Conjugal Onanism.* New York, 1870.

No. 388.—Yes. Use a solution of from 2·5 to 5 per cent., at intervals of three or four days. Probably not more than three or four injections will be needed. Give the patient cascara sagrada daily during and after the treatment.

No. 389.—There is no such compound except one that is unstable, and we know of nothing to sustain the man's pretensions.

Letters to the Editor.

A REPLY TO MR. AUGUSTINE SMITH.

20 East Twenty-ninth Street, *November 14, 1892.*

To the Editor of the New York Medical Journal:

Sir: Upon my return from Europe, two days ago, my attention was called to a communication from Augustine Smith, a member of the Paper Makers' Association of America, in relation to rags and cholera, and a rejoinder from Dr. Jacobi. The public use of my letter was entirely unauthorized, and I can not imagine that it can have any significance except so far as to show that when its recipient, to a degree, defended the reprehensible measure of bringing rags into this country at this time, he evidently neglected to avail himself of its contained advice, and therefore ignored the fact recognized and acted upon by all civilized people, that not only cholera but other infectious diseases are carried in textile fabrics that have come into bodily contact with affected subjects. He could have easily found the information he desired in the United States Government Reports of the Cholera Epidemic of 1873, or in accessible authorities.

In view of the fact that Mr. Smith and his friends have made my letter the basis of ill-considered editorials, it was, after all, an unnecessary act of courtesy upon my part to reply to either of his communications, for the Advisory Medical Board of the Chamber of Commerce was appointed only for a specific purpose. It could and would not, for many obvious and satisfactory reasons, consent to act as the special adviser of corporations and associations, and there was no occasion for the establishment of a precedent in Mr. Smith's case.

It is hardly necessary to state that this letter is to be regarded only as a personal and unofficial communication.

Allan McLane Hamilton.

Proceedings of Societies.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

Fourteenth Annual Congress, held at Boston on Monday, Tuesday, and Wednesday, June 20, 21, and 22, 1892.

The President, Dr. S. W. Langmaid, of Boston, in the Chair.

The Influence of Certain Diathetic Conditions upon the Prognosis in Operations upon the Throat.—Dr. D. B. Delavan, of New York, read a paper with this title. (See page 567.)

Dr. S. H. Chapman, of New Haven: This subject is one of very great importance to all of us. In operating we have all met with cases in which hæmorrhage was unusual and was the cause of great anxiety. While I have not looked over my records for cases of hæmorrhagic diathesis, I have no doubt that some cases might be found on which this paper would throw some light. There undoubtedly are cases of the hæmorrhagic diathesis, but the diagnosis may, as in one case which came under my observation, prove somewhat puzzling. My patient was the wife of an officer, and consulted me for some trouble with the throat. Examination, however, showed the throat to be in perfect order, except that it was somewhat anæmic. There was only slight dullness over a limited portion of the left lung. There was no history of fever or of debility, or of anything unusual, except that, upon much exercise or during overheat in the night, severe heæmorrhage would take place either from the lung or, as she thought, from the throat. It had begun six years before, and until I saw her she had had perhaps a dozen severe hæmorrhages each week, had become very anæmic, her pulse was rapid, and metrorrhagia had developed. I told her husband that it looked to me like a case of the hæmorrhagic diathesis. There was a family history of syphilis one generation back, and to that I was inclined to attribute the hæmorrhagic diathesis. My diagnosis was, however, incorrect, for three years ago she was taken with a violent attack of coughing, and coughed up something which her husband brought to me, and which proved to be a smooth piece of bone. After that the coughing and the hæmorrhages ceased, and the woman gained wonderfully in health, becoming quite robust. On carefully interrogating her as to the occurrence of the first hæmorrhage six years before, she recalled the fact that it occurred when she was eating in haste of lamb stew at St. Paul, where she was about to take a train. While eating she felt a sense of suffocation, arose from the table, and had a severe hæmorrhage, which came apparently, like the rest later, from the throat. I suppose that in hurriedly eating she swallowed a piece of bone which caught in the throat, cut a vessel, causing hæmorrhage, that this hæmorrhage had recurred from time to time until in the course of years the bone had become small enough from erosion to be coughed up. At all events, since coughing up the piece of bone she has had no more hæmorrhages, her periods have become normal, and she expresses herself as feeling wonderfully well.

Dr. J. Wright, of Brooklyn: The author's reference to adenoid tissue in the naso-pharynx was of especial interest to me from a diagnostic point of view, as I have in the past few years seen a number of cases in which it was difficult, by a microscopic examination made by myself and also by expert microscopists, to say whether the case was one of simple lymphoid tissue or of round-celled sarcoma. I remember one case, supposed to be a lymphoid growth implicating the tongue, in which the subsequent history proved it to be a sarcoma. It eems to me that in some of those cases in which a diagnosis of adenoid growth has been made and it returns again and again, possibly it is sarcomatous.

Regarding severe hæmorrhage after post-nasal operations, a case recently occurred at my clinic, operated upon by Dr. Newcomb, similar to the one related by Dr. Delavan—that is, the child began to bleed five or six hours after the operation, the doctor was not sent for until too late, and death took place next morning from hæmorrhage. I have also had a case of severe hæmorrhage in private practice (reported elsewhere), in which I was called the night after operating by taking out several pieces of adenoid growth, and found the patient still bleeding from the nose and pharynx, and even from the perforations in the ears, having lost a large amount of blood. In this case the ordinary means of stopping hæmorrhage were resorted to, but finally I had to plug the posterior nares, which was done with absorbent cotton dipped in an iron solution. By the aid of vaseline continually introduced in the anterior nares the plug came away of itself after several hours, without injury to the mucous membrane or recurrence of hæmorrhage.

Dr. Beverley Robinson, of New York: Regarding the value of the galvano-cautery in cases of hæmorrhage, while Dr. Delavan may be correct in stating that it can not be relied upon in hæmophilia, yet it is certainly true that at times when all other means absolutely fail this agent will stop hæmorrhage. A case illustrating this statement occurred in one of my domestics who had been to a dentist for the removal of several teeth. She had been bleeding since evening, but I was not notified until in the middle of the night. All ordinary means were employed, but failed to arrest the flow of blood, and Dr. Charles A. Powers was called; but our combined efforts were not successful until the galvano-cautery was introduced into the cavity left by the tooth. In the opinion of both of us the woman would have died had it not been for the cautery. Whether she had the hæmorrhagic diathesis I can not say, but she was somewhat anæmic.

An agent on which we do not ordinarily rely may sometimes serve to arrest hæmorrhage. For instance, I recall an occasion when Dr. Charles K. Briddon was operating in a case at the Presbyterian Hospital. Hæmorrhage persisted in spite of various means which he resorted to for its control, until it occurred to me, as I was near the operator, to suggest the application of powdered antipyrine upon the wound. This succeeded at once.

(To be continued.)

Book Notices.

A Treatise on Hygiene and Public Health. Edited by Thomas Stevenson, M. D., F. R. C. P. Lond., and Shirley F. Murphey. Vol. I. Philadelphia: P. Blakiston, Son, & Co., 1892. Pp. xii–3 to 1013.

The English regulations require that the medical officer of health shall make himself familiar with the natural and acquired features of the locality to which he is appointed; with the levels, inclinations, soils, wells, and water springs of the district; with its meteorological peculiarities; with the distribution of its buildings and open spaces, and of its burial grounds; with its drainage; with its industries; with the house accommodations of the poorer classes and their opportunities for personal cleanliness; and with the regulations in force for lodging-houses and slaughtering-places, for the cleansing of the place, and for the removal of domestic refuse. It is necessary for such an officer to have a knowledge of vital statistics, that he may obtain information as to disease prevalence and the extent of its dependence upon removable causes. With these requirements in view, and how greatly it is to be deplored that they are not demanded of all health officers in this country, this work has been written by various authors, well qualified to present the attainable knowledge of the subjects of which they treat.

Professor J. Lane Notter, M. D., is the author of the section on air, in which he considers the character of the impurities in the air and the diseases that are produced thereby; the bases for calculating the amount of fresh air required; and the contamination of the air by impurities due to the breath, to perspiration, to combustion, as well as those that are derived from walls, floors, etc. The methods for determining the amount of fresh air required to keep an inhabited air-space healthy are described, as well as those employed for the chemical and microscopical examination of the air.

Mr. W. N. Shaw, the lecturer on physics in the University of Cambridge, is the author of the section on warming and ventilation, which subject he treats of in a general way, referring to various special articles for a description of the ventilation of hospitals, sewers, ships, mines, and tunnels.

The secretary of the Royal Meteorological Society, Mr. G. J. Symons, is the author of the section on meteorology, that is appropriately made quite brief.

Dr. C. Theodore Williams is the author of the paper on the influence of climate on health. We are surprised to note his acceptance of the discredited *Bacillus malariæ* of Klebs and Tommasi-Crudeli, which authors now accept the *Hæmatozoon* of Laveran as the cause of paludal fevers. The *Amœba coli* is not referred to in its relation to dysentery and hepatic abscess in subtropical and tropical countries.

Dr. Stevenson, one of the editors, is the author of the section on water, in which he considers the desirable sources for obtaining potable water, the important influence that this necessary article exercises on human welfare, and the chemical and bacteriological examination of water.

Dr. S. Monckton Copeman is the author of the section on the influence of soil on health. He has carefully and judicially reviewed the literature of the relation of soil to various infectious and constitutional diseases, and he describes the present methods of making bacteriological examinations of the soil.

The chapter on food, written by Dr. Sidney Martin, includes the usual tables of standard diet, etc., that are necessary for a presentation of this topic.

Dr. E. W. Hope, in the section on the inspection of meat, has made use of the additions that bacteriology has made to our knowledge of the causes that render meat unfit for food.

Dr. George Vivian Poore is the author of the section on clothing, and the chapter is a very sensible one in its reference to the clothing that is used to-day, both by men and by women.

In the section on physical education Mr. Frederick Treves omits nothing that we recall that has any influence on muscular development and exercise. He points out the disadvantages that some exercises possess, and gives excellent advice regarding those that should be employed.

Dr. W. Hale White, in the section on baths, treats of the various forms in which they may be administered. He makes no reference to public baths, a grave omission, considering the great utility of these institutions.

Mr. P. Gordon Smith and Mr. Keith D. Young, of the Royal Institute of British Architects, are the authors of the section on the dwelling. This includes not only general descriptions of dwellings for private residences, but those of hospitals, schools, workhouses, prisons, and barracks. Quite a number of plans of types of hospitals are given.

Mr. H. G. Howse has written the section on hospital hygiene. We would condemn his tolerance of sacking for beds. Iron frame beds with woven-wire mattresses only should be used in hospitals, and no other mattress should be used upon the wire one. A number of blankets will prove a warm and comfortable covering for the wire, and they may be disinfected by steam under pressure as often as desired, while any other variety of covering is in constant danger of infection and is cleansed with difficulty. We fully appreciate the difficulty of the problem of dealing with visitors to patients, and the only safe plan would be to have the homes of visitors inspected for contagious disease by a hospital official. Lack of space prevents other criticisms on this chapter, which is, however, in general a good exposition of the subject treated of.

The disposal of refuse is discussed by Dr. W. H. Corfield and Dr. Louis C. Parkes, who give a very complete review of the various important phases of this subject.

Dr. T. Whiteside Hime is the author of the chapter on offensive and noxious businesses, and he has included a great deal of information regarding a number of minor occupations that are more or less dangerous to the health of those engaged in them.

The final section in this volume is that on slaughter-houses and their administration, by Dr. E. W. Hope.

From this first volume we are favorably impressed with the work, and believe that it will meet with the approval of sanitarians and health officers in this country as well as in England.

Inoculation a Preventive of Swine Plague, with the Demonstration that the Administration of the Agricultural Department is a Public Scandal. An Exposure by FRANK S. BILLINGS, M. D., Director of the Patho-biological Laboratory of the State University of Nebraska. Printed and published at the expense of the author. Pp. 7–9 to 321.

THIS work purports to be a demonstration of the inefficiency of the Agricultural Department, and it attempts to expose the machinations of an evil-minded and treasonable Secretary of Agriculture, who with his minions is endeavoring to crush the author. The language is of such an undignified character and so lacking in the essentials of controversial writing that the work will probably possess small interest for persons interested in the question of the prevention of swine plague.

But there is another feature of the book that makes it as interesting as the *Diary of Marie Bashkirtseff*, or *Amiel's Journal* to any one interested in psychiatry; and that phase is the borderland from which the work is written.

Early in the volume, though totally irrelevant to the subject matter, the author gives his autobiography; not, however, *in extenso*, for throughout the book allusion is made to personal characteristics. We do not agree with him that he may be called "a crank," and Lombroso's term "mattoid" does not correctly apply to an individual having such a psychical condition. The author believes that he is carried away with scientific enthusiasm, that his colleagues are among Gerlach, Virchow, Leisering, and the men on the wave of scientific research, that "every public servant, or any public man, who in any way interferes with" his endeavors is a public enemy, and that "his personality is as nothing whatever" to him. He asks: "Is there a better man for this work to be found, not only in this country but the world, to day?" And at once answers the question by saying: "Virchow is my only master." He subsequently emphasizes this by saying of the Chief of the Bureau of Animal Industry: "He knew then, as he knows now, that that 'better man' does not exist in the medical profession of this country as a pathological investigator," than he himself.

Again, speaking of himself, he says: "Life being given, the very incarnation of the Devil can not fight a trinity composed of actual ability, incorruptible honesty, and fanatical courage in serving humanity, and these three, backed by money, will ever be too much for anything but a cowardly assassin. His Satanic majesty would have more wisdom than to undertake the job." The "incarnation of the Devil" therein referred to is apparently the Chief of the Bureau of Animal Industry, who knew the author "was competent, and that he would find out and expose the perfidy" of the chief.

Not only are the Secretary of Agriculture and his subordinates the author's enemies, but also Dr. Shakespeare, Dr. Burrill, and, in fact, all who criticise his work.

He believes he is a great fighter and alludes to his exposure of fraudulent methods in the veterinary department of Harvard College. He states that his work is more of a "social, scientific, and political nature than that of a mere investigator"; and that individually the people of a State have not yet arrived at the stage of evolution in which the majority of them know enough to be true to themselves. He states that it would suit him better to live in the turmoil of a great city and take an active part in the great social-political battle for justice, where he could be freer than now to scathe the political parasites and demagogic bullies now in public positions, and who are the mere tools of the bosses of the political machines.

Opinions at variance with his are unworthily entertained. He cares nothing for the adverse opinion of the members of the Association of the American Agricultural Colleges, because the members are "eminently respectable individuals who are absolutely negative for anything good or bad." With this latter class he includes those audacious persons who have expressed the opinion that he was "a disgrace to the stations."

It will not, therefore, surprise those who read between the lines of such utterances to learn that the final section of the book is devoted to a consideration of the causes in American politics that have led to the conditions portrayed by the author.

The book is written by a person who has evidently, from the quotations that we have given, exaggerated ideas of his own importance; and delusions of a persecution that is caused by the cowardice, fear, and jealousy of his persecutors. He feels that he has a mission to revolutionize science and probably society. This type is a familiar one to psychiatrists. If people should take Dr. Billings's diatribes seriously, it would be a mistake.

We believe he is hard working, and he has possibly overtaxed his strength. Certainly this book impresses us as the writing of a man who is dangerously near the border-line between ethical recognition and ethical alienation. And one who believes that he is surrounded by spies of the Secretary of Agriculture would need but a depressing or exciting influence, such as losing his position, to entertain the apparently logical syllogism that such a loss was the consequence of the connivance of the Secretary, that it would interfere with the scientific pursuits of the person removed, and that accordingly the Secretary was an enemy to humanity, that would benefit by these pursuits, and he should be removed in some way.

We do not mean to say that the author will entertain such ideas, but we do mean to say they are the too frequent sequence of ideas of the character of those to which he has given expression. In justice to himself, we believe he should take a vacation that, insuring a change of environment, might eliminate the present existing ideas of grandeur and persecution.

Elements of Materia Medica and Therapeutics. Including the whole of the Remedies of the British Pharmacopœia of 1885 and its Appendix of 1890. By C. E. Armand Semple, B. A., M. B. Cantab., M. R. C. P. Lond., etc. With Four Hundred and Forty Illustrations. London: Longmans, Green, & Co., 1892.

This small volume is a useful companion to the British Pharmacopœia, and physicians in this country will find it of some value for reference. In the preface the author thanks the publishers for their liberality in the use of illustrations which "must prove serviceable in rendering the subject more interesting and in tending to impress the facts more firmly upon the memory." While most of these illustrations are really valuable, it is difficult to understand the object of picturing an orange under *aurantii cortex;* a lemon under *limonis cortex;* an ear of corn under *amylum;* a whale under *spermaceti;* a skeleton of the common hog under *adeps;* two cows under *fel bovinum;* common sheep and pigs under *pepsin;* and finally, to cap the climax, an ordinary barnyard chicken under *ovi albumen.* These are very well in children's primers, but adults are sufficiently familiar with these objects not to require their reproduction in cuts in a scientific book, particularly where they seem to have little relevancy to the subject of the text.

A Manual of Chemistry, Inorganic and Organic, with an Introduction to the Study of Chemistry. By Arthur P. Luff, M. D., B. Sc. (Lond.), M. R. C. P., etc. Illustrated with Thirty-six Engravings. Philadelphia: Lea Brothers & Co., 1892. Pp. 525.

This little book is written as a guide to those portions of the science of chemistry that have relation to the study and practice of medicine, and as such ought to have a wide sale and proper appreciation. It is one of the best compends of the kind that we know of.

Rest and Pain. A Course of Lectures on the Influence of Mechanical and Physiological Rest in the Treatment of Accidents and Surgical Diseases, and the Diagnostic Value of Pain. By the late John Hilton, F. R. S., F. R. C. S., etc. Edited by W. H. A. Jacobson, M. A., M. B., etc. Fifth Edition. London: George Bell & Sons, 1892. Pp. 514.

These lectures were delivered in 1860 to 1862, and published first about that time by Mr. Hilton. The popularity of the book may be judged by the appearance of a fifth edition, practically unchanged by the editor from the first form in which the lectures appeared. A new review of this classic is therefore unnecessary, for everybody is familiar with the novel views it expresses and with the author's captivating style.

Zwölf Vorlesungen über den Bau der nervösen Centralorgane. Für Aertzte und Studirende. Von Dr. Ludwig Edinger, Arzt in Frankfurt am Main. Dritte umgearbeitete Auflage, mit 139 Abbildungen. Leipzig: F. C. W. Vogel, 1892. Pp. 196. [Preis, 7 Mk.]

This is the third edition of a book we have already reviewed. It has been largely added to, not only in the way of text, but also in that of illustrations. We have before stated that this is by far the best book upon the anatomy and histology of the central nervous system to be found in any tongue, and it is to be hoped that the American translator of this book will speedily make use of the abundance of new material in this last German edition by bringing out a third edition of the Englished version.

A Practical Treatise on Diseases of the Skin. By John V. Shoemaker, A. M., M. D., Professor of Skin and Venereal Diseases in the Medico-chirurgical College and Hospital of Philadelphia, etc. Second edition, revised and enlarged.

with Chromogravure Plates and other Illustrations. New York: D. Appleton & Co., 1892. Pp. 878.

THIS practical book has been brought up to date in its second edition by the addition of all facts pertaining to the skin which have been learned recently in such departments as bacteriology, local antisepsis, electric cataphoresis, dietetics, therapeutics, and pathology. It is an excellent work and can not but be useful to both students and physicians.

Napheys's Modern Therapeutics, Medical and Surgical, including the Diseases of Women and Children. A Compendium of Recent Formulæ and Therapeutical Directions from the Practice of Eminent Contemporary Physicians, American and Foreign. Ninth Edition, revised and enlarged. Volume I. General Medicine and Diseases of Children, by ALLEN J. SMITH, M. D., Assistant Demonstrator of Morbid Anatomy and Pathological Histology, Lecturer on Urology, University of Pennsylvania, and J. AUBREY DAVIS, M. D., Assistant Demonstrator of Obstetrics, University of Pennsylvania. Philadelphia: P. Blakiston, Son, & Co., 1892. Pp. xx–1034. [Price, $5.]

THAT this book has reached its ninth edition certainly shows what a hold upon the profession such works may take, but it is not of necessity a proof of merit. This journal has seen reason to criticise preceding editions on the ground that works of this character tended to encourage a habit of rote prescribing. It has also drawn attention to some of the doses advised as dangerously large. The present edition is not entirely free from the applicability of the same criticism. An eighth of a grain of morphine, or a sixteenth of a grain of apomorphine, with two minims of undilute hydrochloric acid, four times a day, is not proper in the treatment of a child with whooping-cough. The editor of such a work can not shield himself behind the plea that he is simply recording another man's opinion. It is not supposed to be a review of all methods of treatment, but rather a record of the best treatment, and the editor is responsible for all the book contains.

The present edition is not well up with the times upon all subjects. A discussion of intubation and tracheotomy dating from 1881 to 1888 is antiquated, and Jacobi has changed many of his views upon diarrhœa since 1879. The work, used as a guide or index, may prove of considerable value; as a makeshift to supply a deficiency of knowledge of therapeutics, it may prove disastrous to the unfortunate patients upon whom its prescriptions are tried.

The Ready-reference Hand-book of Diseases of the Skin. By GEORGE THOMAS JACKSON, M. D., Chief of Clinic and Instructor in Dermatology, College of Physicians and Surgeons, New York; Professor of Dermatology in the Woman's Medical College of the New York Infirmary, etc. With Fifty Illustrations. Philadelphia: Lea Brothers & Co., 1892.

THIS is a plain, practical survey of skin diseases, intended to present dermatology as it now exists. Symptomatology, diagnosis, and treatment occupy the first place, pathology and ætiology receiving secondary consideration. To the general practitioner and the student of dermatology it is specially useful, as it is free from discussions of debatable questions and from any form of redundancy. Classification is done away with, because in the present state of medical knowledge it is impossible to make a satisfactory classification of skin diseases. Well-tried and valuable formulæ are given, there is a good index, and the entire five hundred and thirty-three pages offer much that is instructive and everything that is modern. The exposition of the various cutaneous manifestations of syphilis, occupying nearly forty pages, is simple and complete. Abnormal conditions in which there are lesions of the skin, such as myelosyringosis, are defined, and the reader is referred for further information to the special departments in medicine to which they belong. Clearness, common sense, and simplicity are the qualities that chiefly commend this admirable hand-book to the serious student.

Household Nursing. By JOHN OGLE TUNSTALL, M. D. Lond., Member of the Royal College of Surgeons of England, late Senior Resident Medical Officer of the Birmingham Infirmary, etc. London: T. Fisher Unwin, 1892.

THIS is one of the few books on nursing that do not require on the reader's part a definite medical education in order to understand them. The language is plain, never technical, and is addressed to any person of ordinary intelligence who, from inclination or duty, undertakes the care of the sick. The relationship between nurse and doctor is emphasized, the chief duties of the nurse are carefully given, two chapters are devoted to emergencies, one is given to food in disease, one to special nursing in infectious and other cases, and one to general nursing, and the appendix gives suggestions for diet in acute illness and during convalescence. The facts contained in this little book are those that everybody should know in order to limit disease, shorten illness by placing patients under the best conditions for recovery, and aid the physician in his work in every possible way.

Examen des aliments suspects. Par H. POLIN, médecin major de l'armée, et H. LABIT, médecin major de l'armée. Avec une préface de M. le Professeur J. ARNOULD, médecin inspecteur de l'armée. Paris: G. Masson, 1892. Pp. 5–229. [*Encyclopédie scientifique des aides-mémoire.*]

IN this little volume the authors discuss the examination of food stuffs. They show that changes in them may be due to chemical or mechanical agencies or be the consequence of biological alterations. A chapter is devoted to the consideration of the alterations caused by parasites and micro-organisms. The detection of the noxiousness of suspected aliments is considered in chapters devoted to animal food stuffs, to vegetable foods, to preserved food products, and to the beverages in common use. There is a brief chapter on the preparation of food and the utensils employed therein. The value of the book would be increased for students if it was provided with an index.

The Student's Handbook of Surgical Operations. By FREDERICK TREVES, F. R. C. S., Surgeon to and Lecturer on Anatomy at the London Hospital, etc. With Ninety-four Illustrations. (Abridged from the Author's *Manual of Operative Surgery.*) Philadelphia: Lea Brothers & Co., 1892. Pp. xv to 495. [Price, $2.50.]

THIS excellent little volume, which can easily be carried in the pocket, contains descriptions of all the common operations, illustrated by ninety-four engravings. Taken in connection with the author's *Manual of Surgery*, it will surely be very popular among students as well as busy practitioners.

Menstruation et fécondation. Physiologie et pathologie. Par A. AUVARD, accoucheur des hôpitaux. Paris: G. Masson, 1892. Pp. 12–13 to 195. [*Encyclopédie scientifique des aides-mémoire.*]

THE author has briefly but comprehensively surveyed the physiology of menstruation and of fecundation. He describes the varieties of amenorrhœa, metrorrhagia, dysmenorrhœa, and sterility. Under the latter heading he discusses the causes of sterility as observed in the male and in the female. There is an excellent description of the method of performing artificial fecundation. The book will prove an interesting one to the student, and a fair index increases its usefulness.

Les fonctions du cerveau. Doctrines de l'école de Strasbourg. Doctrines de l'école italienne. Par Jules Soury. Paris: Lecrosnier et Babé, 1891.

This volume is one of a series of histories of the contemporary doctrines of physiological psychology. In Part I the author gives a critical analysis of the theories and experiments of Goltz, the leader of the Strassburg school and the bitter opponent of the theory of cerebral localization. It appears that Goltz's own experiments, when correctly interpreted, are really in favor of the doctrines he opposes.

The account of the work of the Italian observers is the most valuable portion of the book, and is very interesting reading.

The work, as a whole, forms a complete presentation of the modern views of the functions of the various regions of the brain.

The Essentials of Histology. Descriptive and Practical. For the Use of Students. By E. A. Schafer, F. R. S., Jodrell Professor of Physiology in the University College, London. Third Edition, revised and enlarged. Illustrated by more than Three Hundred Figures, many of which are New. Philadelphia: Lea Brothers & Co., 1892. Pp. xi to 302. [Price, $3.]

A new edition of this little work is an evidence of its popularity as a text-book, the division of its subject matter into forty-five lessons making it very convenient for laboratory use. Some slight changes and additions have been made in this edition, and the commendation we have given to the other editions is still deserved.

Medical Microscopy: A Guide to the Use of the Microscope in Medical Practice. By Frank J. Wethered, M. D. (Lond.), Member of the Royal College of Physicians, etc. With Illustrations. Philadelphia: P. Blakiston, Son, & Co., 1892. Pp. xix–9 to 406.

The author describes in the first chapter of this little work the microscope and its accessories, and we are glad to note that he mentions certain American firms among the names of the manufacturers of good instruments. He then describes the more commonly employed methods of hardening and decalcifying, imbedding, cutting sections, staining, clearing, and mounting; and he gives a chapter to the selective stains. The methods of preparing specimens of various tissues and organs are clearly described, as well as those for examining tumors, urinary deposits, fæces, sputum, vomit, blood, and discharges from various cavities. We do not see the reason for introducing into the chapter on the examination of the blood a description of Gowers's hæmoglobinometer and of von Fleischl's hæmometer. The chapter on cutaneous parasites is appropriate, but why should there be a chapter on the examination of food and water in a work on medical microscopy? This chapter is too brief to be of any practical use, and the space it occupies could well have been given to a more extended treatment of some other portions of the work.

The same criticism applies to the chapter on bacteriological methods that can not be even meagerly described in twenty-three small pages.

Dr. Wethered's work is very practical; the student will not be confused by the citation of numerous methods, the illustrations are well selected, and the volume will prove serviceable to any student of medical microscopy.

BOOKS, ETC., RECEIVED.

Practical Pathology. A Manual for Students and Practitioners. By G. Sims Woodhead, M. D., F. R. C. P. Edin., Fellow of the Royal Society, Edinburgh, etc. With One Hundred and Ninety-five Colored Illustrations. Third Edition. Philadelphia: J. B. Lippincott Company, 1892. Pp. xix to 652. [Price, $7.]

Diseases of the Kidneys and Bladder: a Text-book for Students of Medicine. By W. F. McNutt, M. D., M. R. C. S. Edin., L. R. C. P. Edin., Professor of the Principles and Practice of Medicine, University of California, etc. Philadelphia: J. B. Lippincott Company, 1892. Pp. 4–7 to 242. [Price, $2.50.]

Histology, Pathology, and Bacteriology. A Manual for Students and Practitioners. By Bennett S. Beach, M. D., Professor of Anatomy, College of Physicians and Surgeons, New York, etc. Series edited by Bern B. Gallaudet, M. D., Demonstrator of Anatomy, College of Physicians and Surgeons, New York. Philadelphia: Lea Brothers & Co., 1892. Pp. 8–17 to 165. [*The Students' Quiz Series.*]

The Anatomy of the Peritonæum. By Franklin Dexter, M. D., Assistant Demonstrator of Anatomy, College of Physicians and Surgeons, New York. With Thirty-eight Illustrations. New York: D. Appleton & Co., 1892. Pp. 86. [Price, $1.50.]

The International Magazine Pocket Visiting List. Sixty Patients each Week. 1893. Arranged for the Use of Practitioners. By J. C. Wilson, M. D., Physician to the German Hospital. Philadelphia: J. B. Lippincott Company. [Price, $1.50.]

Cases of Cranial Fracture, with Remarks and Presentation of Cases. By William B. Van Lennep, M. D., Philadelphia. [Reprinted from the *Hahnemannian Monthly.*]

The Curability of Narcotic Inebriety. By J. B. Mattison, M. D. [Reprinted from the *Cleveland Medical Gazette.*]

Extirpation du cancer de l'estomac: étude sur un cas de guérison. Par L. Defontaine (du Creusot). [Extrait des *Archives provinciales de chirurgie.*]

Diseases of the Chest, Throat, and Nasal Cavities, including Physical Diagnosis and Diseases of the Lungs, Heart, and Aorta, Laryngology and Diseases of the Pharynx, Larynx, Nose, Thyreoid Gland, and Œsophagus. By E. Fletcher Ingals, A. M., M. D., Professor of Laryngology and Practice of Medicine, Rush Medical College, etc. Second Edition, revised and enlarged. With Two Hundred and Forty Illustrations. New York: William Wood & Co., 1892. Pp. xxi–3 to 675.

Text-book of Nervous Diseases, being a Compendium for the Use of Students and Practitioners of Medicine. By Charles L. Dana, A. M., M. D., Professor of Nervous and Mental Diseases in the New York Post-graduate Medical School and in Dartmouth Medical College. With Two Hundred and Ten Illustrations. New York: William Wood & Co., 1892. Pp. xii to 524.

Diseases of the Lungs, Heart, and Kidneys. By N. S. Davis, Jr., A. M., M. D., Professor of Principles and Practice of Medicine, Chicago Medical College. Philadelphia and London: The F. A. Davis Co., 1892. Pp. vii–3 to 359. [No. 14 in the *Physicians' and Students' Ready-Reference Series.*]

The Sanitary Side of the Drink Problem. By T. D. Crothers, M. D., of Hartford, Conn. [Reprinted from the *Journal of the American Medical Association.*]

Three Cases of Acute Mania from inhaling Carbon Bisulphide. By Frederick Peterson, M. D., of New York. [Reprinted from the *Boston Medical and Surgical Journal.*]

A Successful Case of Cæsarean Section. By T. Gaillard Thomas, M. D. [Reprinted from the *Medical Record.*]

Compressed Air and Sprays in Diseases of the Nose, Throat, and Ear. By S. S. Bishop, M. D., of Chicago. [Reprinted from the *Journal of the American Medical Association.*]

Miscellany.

Ophthalmometry in America.—In a very valuable paper on Corneal Astigmatism presented at a meeting of the Philadelphia County Medical Society held on October 26th, Dr. G. E. de Schweinitz introduced his subject with the following historical remarks:

The ophthalmometer of Javal and Schiötz requires no introduction. Its advantages as an instrument of practical use are everywhere recognized, and even those who look upon its readings with misgivings are not inclined, I think, to disregard it entirely or set it aside in the lumber-room. True, it has sometimes suffered from unduly enthusiastic advocacy, but plenty of conservative estimates of its undoubted value are extant, and may be consulted for trustworthy information.

It will be interesting for a moment to give a brief *résumé* of the rise of ophthalmometry with this instrument in the United States. To Dr. Swan M. Burnett, of Washington, belongs the credit of having been the first one in this country to advocate its use and to demonstrate its practical value, in a paper entitled Ophthalmometry with the Ophthalmometer of Javal and Schiötz, with an Account of a Case of Keratoconus, which appeared in 1885.[*] Two years later his treatise on astigmatism was published, containing a description of the instrument and of its value as a means of measuring the corneal astigmatism. One year later he recorded an exhaustive analysis of the refraction of more than five hundred healthy human corneæ examined with the ophthalmometer of Javal and Schiötz,[†] and in the discussion which followed this paper, Dr. Henry D. Noyes praised the ophthalmometer of Javal, stating that it was his habit to employ it in every case where it was necessary to inquire into the refraction of the eye. In his work on diseases of the eye there is an excellent description of the instrument and of the method of using it.

In the years which have followed we find papers on the subject of ophthalmometry with this instrument by H. D. Speakman,[‡] by Koller,[#] and an earnest advocacy of its employment—an advocacy which has never ceased, and has never been couched in words of an uncertain tone—by Roosa.[‖] In November, 1891, Dr. F. W. Ring[△] published a good description of the ophthalmometer and its uses, based upon personal conversations with Tscherning, Bull, of Paris, and Javal, and upon notes selected and compiled from the *Mémoires d'ophthalmométrie.* At the forty-second annual meeting of the American Medical Association, held in Washington, May, 1891, Dr. Burnett placed upon record further contributions to keratometry, reviewing his previous work and reiterating his favorable opinion of the ophthalmometer. In the present year articles upon this subject have been written by E. Swasey,[◊] Roosa, Würdemann,[‡] Van Fleet,[‡] and others; while Valk, in the new edition of his *Errors of Refraction*, gives a good description of the ophthalmometer, and records a table of comparative examinations.

Some unfavorable comments have been published, together with a series of tables not unlike the one which I hope to present this evening, by Dr. J. H. Woodward;[*] but even in this paper, although objections are made to certain inaccuracies, according to the belief of this author, he frankly admits that the ophthalmometer is a useful adjunct and helps to point the way to the diagnosis of astigmatism, being especially useful when this refractive defect is of high degree.

The most recent communications upon the subject in this country are the papers of A. E. Davis,[†] containing, as it seems to me, the best practical directions for using the instrument accurately. I have not attempted to give references to the many foreign papers upon this subject; any one interested will find quite a complete bibliography in Javal's *Mémoires*.

Thus we see that from the publication of Dr. Burnett's paper, in 1885, up to the present time, numerous communications have appeared in this country, many of them strongly advocating the employment of this instrument.[‡] Practically there has been no dissent from the views which Burnett advocated nearly eight years ago, and it seems eminently proper that Javal should characterize him, which I am sure we are all glad to do, as the champion of ophthalmometry in America.

A Clinical Description of Dysentery as it occurs in Nicaragua.—At the same meeting Dr. Judson Daland read the following paper: Three varieties of dysentery are met with in Nicaragua—namely, the malarial, the endemic, and the epidemic, and of these the malarial is by far the most common. The prodromal symptoms of malarial dysentery are malaise, pain in the back, in the head, and in the umbilical region extending toward the pubes. In association with the diarrhœa these pains are highly characteristic of this form of dysentery. Mild cases are marked by very slight febrile and circulatory disturbances; whereas, in the more severe cases, we have a moderate elevation of temperature, varying between 102° and 104° F. The stools are at first composed almost entirely of pure mucus, are small in quantity, and are frequently attended by tenesmus; soon the mucus is streaked with blood. The pains are not usually severe during the act of defecation, but the pain in the head and back is excruciating. Liver complications are not infrequent, particularly acute hepatitis or acute hepatic engorgement, each of which is frequently associated with jaundice. Hepatic abscess is a rare complication and is usually secondary to the ulceration of the colon. At times the spleen becomes greatly engorged.

Changes in the urine, indicative of kidney disease, probably exist, but chemical and microscopical examinations are rarely made from lack of proper instruments and reagents. Many of these cases of malarial dysentery are followed by intense anæmia and debility, lasting for several months.

When cases are seen early and promptly treated, the prognosis is almost uniformly favorable, but when seen late they usually die. As post-mortem examinations are never permitted, no information exists regarding the morbid anatomy or pathology of this interesting disease. The *Amœba coli*, if searched for, would be found in many of these cases.

The treatment found most successful by Dr. Bermudez, of Managua, Nicaragua, is as follows: To an adult is given six grains of quinine, morning and evening, in conjunction with—

R Ammonium chloride	gr. v;
Pulv. ipecac	gr. v;
Tr. opii	gtt. x–xv.

To be repeated every two hours.

The amount of laudanum is determined by the severity of the pain. When the pain is particularly severe and obstinate, morphine is superadded, and in cases marked by debility it is customary to substitute the carbonate for the chloride of ammonium, in five-grain doses every two hours, day and night.

In the way of food nothing is permitted except milk or milk and lime-water, to which sago may be added. The patient is allowed to drink freely of cool water, thus alleviating the intense thirst which is usually present. Ice-water is considered harmful.

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[*] *Archives of Ophthalmology*, vol. xiv.

[†] *Transactions of the American Ophthalmological Society*, 1888.

[‡] *Archives of Ophthalmology*, 1890, vol. xix, and *Medical Record*, 1890, vol. xxxvii.

[#] *Journal of the American Medical Association*, 1890, xv, 380 to 383.

[‖] *Medical Record*, April 19, 1890; *New York Medical Journal*, March 28, 1891; *Medical Record*, March 26, 1892.

[△] *Ophthalmic Record*, November, 1891.

[◊] *Boston Medical and Surgical Journal*, March 10, 1892, cxxvi, pp. 232 to 236.

[‡] *Journal of the American Medical Association*, September 3, 1892.

[‡] *New York Medical Journal*, July 9, 1892.

[*] *New York Medical Journal*, July 16, 1892.

[†] *Ibid.*, September 10, 1892.

[‡] It should be stated that Dr. Weiland has made a study of what he believes to be the main defects of the ophthalmometer of Javal from a mathematical standpoint, and has published his research in the *Medical News*, 1892, lx, 626 to 629.

The *second* variety, known as endemic dysentery, resembles the preceding, but is very much milder, and is usually unattended by the fever or the severe pains in the head, back, extremities, or abdomen that characterize the malarial form. The stools are composed of fæces mixed with mucus and blood, are less frequent, and the tormina and tenesmus are less severe.

The average duration of malarial dysentery is three weeks, but occasionally it has been known to last two months, while very mild cases run their course in two weeks.

The treatment for this variety is the same as for the malarial, with the exception that the quinine is omitted. Almost all cases recover, and complications or sequelæ are uncommon.

The *third* variety recognized is called epidemic dysentery, which, as a rule, comes on suddenly, with pains in the head, back, throat, and extremities, accompanied with severe abdominal pains, shooting in character and centering at or about the umbilicus. Headache is particularly complained of; and not infrequently nausea and the vomiting of bile are associated. From the first the discharges are bloody, frequent, and there is intense pain and tenesmus. There may be as many as one hundred and fifty evacuations in the twenty-four hours, and an ordinary case may average twenty-four in the twenty-four hours, or one hourly, day and night. The temperature is high, ranging from 104° to 106° F., with a morning remission of two degrees, at which time there may be moderate perspiration. Severe cases die in less than seven days, and favorable cases may recover in from two to three weeks.

The discharges from the intestines continue bloody throughout the disease, but change in color, becoming dark and sometimes black from decomposed blood-pigment, and frequently they are viscid and tenacious from admixture with mucus.

At times the patient becomes delirious, and occasionally coma supervenes. Children often develop twitching of the muscles, rolling of the eyes, and there is a tendency to bury the head in the pillow.

The complications usually noted are hepatitis, jaundice, and abscess of the liver. Usually so soon as hepatic complications occur the patient dies; in other cases epidemic dysentery is complicated by croupous pneumonia with rusty sputum, and it usually affects the base of the right lung. Now and then severe internal hæmorrhages occur, and such an accident explains the cause of sudden death which has been occasionally observed. In this form of dysentery the anæmia and debility are more marked than in the malarial form, and more persistent. Not infrequently the patient suffers from obstinate constipation, due to stricture resulting from the healing of large and deep ulcers in the colon.

These cases are best treated by the administration of from ten to twenty grains of quinine given three times daily, and in addition chloride of ammonium, five grains; pulverized ipecac, five grains; and tincture of opium, ten to fifteen drops, repeated every two hours. Frequently, however, there is so much gastric irritability that these remedies are not retained, and in such cases the quinine is continued, but the chloride of ammonium and ipecac mixture is omitted, and fifteen grains of bismuth or five grains of tannic acid repeated every two hours, is substituted. When opium is indicated it is invariably administered in the form of the tincture, in doses of five to fifteen drops, repeated every two or three hours according to the severity of the case. At times nitrate of silver, in doses of one sixth or one eighth of a grain in pill form, is given every three hours. If the astringents mentioned prove of no avail, recourse is had to the acetate of lead, in doses of two or three grains every three hours. Most cases require stimulants, and experience has shown that alcohol in the form of brandy or whisky is *inadvisable*, and that the best results are secured from the use of sherry, port, or any of the red or white wines, associated with the carbonate of ammonium, in ten-grain doses repeated every three hours.

The food is restricted to milk and lime-water, sago, and farina. Not infrequently Dr. Bermudez has seen as many as one hundred cases in two months with the mortality of but two per cent., and his father would probably see as many as two hundred cases in the same length of time.

Dysentery is one of the most common diseases of Nicaragua, and typical examples of the disease may be seen any day in the year. Most cases of malarial dysentery are observed during December, January, and February, while the epidemic variety occurs more frequently during the months of March, April, and May. Of course, endemic dysentery is always present, and, as would be naturally expected, is equally prevalent at all seasons. The malarial form prevails chiefly in low, marshy districts, during the hot months. It is well to remember that the dry season, which corresponds to our summer, begins in November and ends in April, the remaining months constituting the Nicaraguan winter, or wet season. The average maximum temperature in the dry season is from 95° to 98°. There is a difference of at least 10° between the temperature of the day and that of the evening.

The contagiousness of epidemic dysentery is fully recognized, and all ordinary precautions are taken to prevent the spread of the disease. Isolation, the free use of carbolic acid, the burial of all discharges, especially fæcal and urinary; the burning of the linen soiled by the discharges; and in cases where the patient is too poor to submit to the destruction of clothing by burning, they are disinfected by boiling water.

In all of these cases no researches have been made regarding the presence of the *Amœba coli.*

Nicaragua has excited much interest of late, particularly in view of the probability that in the near future the Nicaraguan canal will become a reality, which will bring it into intimate relations with the entire world. I have, therefore, ventured to record these observations regarding a disease which prevails constantly, and at times becomes contagious.

My thanks are due to my friend and student, Dr. Salvador Bermudez, and to his father, who has practiced in Nicaragua for more than thirty-five years, for the description of dysentery as it appears in Nicaragua, and for the treatment which has given them the best results. The enormous experience of the physicians of Nicaragua has heretofore never been made known to the medical profession, in so much as they have no medical magazine to which they could report their observations; and, moreover, at no time has it been their custom to carefully note the cases under their care; so that this report is of particular value, and is, perhaps, the first of the kind published in the English language. It is especially worthy of note that the greatest confidence is placed in the use of the chloride of ammonium, and that this is their uniform practice. I would, therefore, suggest that it be employed in the United States, especially in the Southern States, where the climate more nearly resembles that of Nicaragua.

The Ancient and Modern Greeks in Medicine.—A gentleman who modestly signs himself "κ . . . γγ" contributes to the *Boston Medical and Surgical Journal* for November 10th the following notices of several modern Greek publications:

Περὶ τῆς παρ̀ 'Ιπποκράτει ἐπιδημικῆς Γρίππης (Influenza), *ὑπὸ* Γ. Φωκα, 'Ιατροῦ. 'Εν 'Αθηναῖς, 1892. Σελ. *ή*—49, *ἐις* 8*ον*.

Such is the title of an essay for which a prize was given last year by the Royal Medical Society at Athens, Greece.

While learned medical men of other nationalities have been trying, for a long while past and up to the present time, to find out the origin and cause of the malady, so recently pandemic, and have been able to trace it so far back only as the ninth century, an Athenian physician (having the advantage of them all in that the Greek is his vernacular), has clearly shown, with great acumen and most careful investigation, that *la grippe* certainly existed in and before the time of Hippocrates. This he does by numerous citations from the works of Hippocrates himself, and especially from the description of the great epidemic which prevailed at Perinthos, in Thrace, five hundred years before the Christian era.

The citations of Dr. Phokas embrace the ætiology (dubious then as now), symptoms, progress, complications, and the many varied characteristics of the disease, together with its prognosis and treatment—all of which correspond remarkably to the results of the latest investigations. The treatment, as reasonable as any resorted to since, was often disappointing, and many a modern will agree with Hippocrates when he says that in severer cases "*οὔδὲν ἄξιον λόγου ὠφέλει.*"

Moreover, these researches show that the disease so recently *upon the people*, and which as yet has hardly left us, nor ceased to puzzle the profession and others, is no new thing, but was as well known and as well cared for thousands of years before our day as at the present time, though its modern name did not appear until two or three centuries ago.

Thus in the ages diseases come, go, and return, ever varying, ever the same, like the zephyrs and the whirlwinds; and, if ever indicating their approach, seemingly, in their coming and going, as little influenced by human schemes and human powers as storms or other phenomena of nature.

The essay of Dr. Phokas, besides receiving the prize above mentioned, has been accepted by the French Academy of Medicine, after a report of a commission, for its *archives*, and Dr. Phokas, by a formal vote of the academy, has been requested to continue his researches on the subject in other works of ancient Greek writers.

Modern medical science may profit by these investigations of Dr. Phokas. His paper is worthy of an English translation, but any one who may read it in the original Greek will find it very interesting and very instructive.

Ἀετίου λόγος δωδέκατος πρῶτον νῦν ἐκδοθεὶς, ὑπὸ Γεώργιου Α. Κωστομοιροῦ, *ὑφησγητοῦ, κ.τ.λ.* Σελ. *ριβ'*—131, *ἐις* 8*ον*. Paris, 1892.

After remaining fourteen hundred years in manuscript, and thus known to a very few only, the twelfth book of Aetios now appears for the first time *in print*, under the learned and faithful care of its erudite and painstaking editor, Professor Kostomoires. The volume is worthy of all concerned in its publication; it is pleasing in general appearance, its type beautifully clear, and the paper good. The editor's notes are copious and satisfactory, and its execution throughout gives abundant proof of his rare qualifications for the task.

The subjects of the work are sciatica, arthritis, and kindred maladies, with many suggestions worthy of the attention of the most scientific of modern practicers of medicine. The scientific, however, are sometimes very peculiar. There are among us, we are told, those who assert, and would fain have the community believe, that nothing of permanent value obtained in medicine until within the last thirty or forty years! Not so Professor Kostomoires. He frankly acknowledges his frequent indebtedness to ancient writers for teachings that have proved practically useful to him. And it was, it seems, the great value of these works in actual practice that led him to go beyond those in print to such as exist in manuscript only. These also he finds very valuable, and feels called upon to make them known to the profession and scientific men. He has, therefore, undertaken the task of editing and publishing these hitherto unprinted works. It is an enterprise of great importance, of immense labor, and of large expenditures of money.

The work of Aetios is the first of the series; and it is understood that the University of Greece has assumed the expense of the publication. The editor, Professor Kostomoires, has the indorsements of governments, universities, academies, and of many eminent medical men and men of science, vouching for his extraordinary qualifications for the task, and urging him to go on to its accomplishment. If they will assume a proportionate share in the necessary pecuniary outlay, the success of the enterprise will be assured. He looks with hope to this country also, that its colleges, schools, medical and other learned societies, and able men may see the importance of the work he has undertaken and give substantial aid to it.

Ἰατρικὴ τοῦ Ἀριστοφάνους, ὑπὸ Ανδρεοῦ *Ἀναγνωτάκη*—Ἔν Ἀθηναῖς, 1891. Σελ. 19, 8*ον*.

The hundreds of physicians who attended the annual dinner of the Massachusetts Medical Society year before last have liveliest recollections of Mr. Clapp's brilliant and captivating speech, made up entirely of quotations from Shakespeare relative to medicine and medical men.

Dr. Anagnostakes has done a similar thing with Aristophanes, only that he has added a running commentary and put the whole in a more permanent form in the publication before us. He has, furthermore, arranged his selections under professional headings with references to the comedy and line quoted, so as to render a special index unnecessary.

In a word, Dr. Anagnostakes points out that with all their fun these comedies are imbued with solid sense and wise teachings, unsurpassedly practical, he says; and concludes

—Ὁ *Ἀριστοφάνης ἐνουθέτει γελῶν καὶ ἐδίδασκε παίζων.*

The three publications noticed above prove incontestably that the Greek language is not wholly *dead*, as some of our orators would have it; and show that the Greeks, especially the Athenians, are *alive* in reminding the outside world that their language, ancient and modern, is worthy of more attention than it has of late received—from those at least who, in their studies, would not omit what has been *beautifully* done in science as well as in literature and art.

The New York Academy of Medicine.—At the meeting of Thursday evening, the 17th inst., the special order was the anniversary discourse, on Pasteur's Life and Work in Relation to the Advancement of Medical Science, by Dr. Lewis A. Stimson.

At the next meeting of the Section in Laryngology and Rhinology, on Wednesday evening, the 23d inst., Dr. Emil Mayer will report a case of congenital stricture of the œsophagus, Dr. W. Freudenthal will read a paper on Asepsis or Antisepsis in Nasal Surgery, and Dr. J. E. Newcomb will read one on the Question of Hæmorrhage after Operations for Naso-pharyngeal Adenoids.

At the next meeting of the Section in Public Health, Legal Medicine, etc., on Wednesday evening, the 23d inst., Dr. L. Fischer will read a paper on The Result of Sewer Gas Examinations.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

THE NEW YORK MEDICAL JOURNAL, NOVEMBER 26, 1892.

Original Communications.

A PLEA FOR

THE EARLY EXTIRPATION OF TUMORS.*

By JOHN W. S. GOULEY, M. D.,
SURGEON TO BELLEVUE HOSPITAL.

At what period of the development of a tumor is its extirpation justifiable? The answers to this question for a long time have been divided between early and late surgical intervention and non-intervention. Some surgeons, at home and abroad, have favored and do now favor early extirpation even in the case of benign tumors, but many advise non-interference so long as tumors are small, painless, stationary, or of slow growth.

The observations of experienced clinicians indicate that malignant tumors sometimes have a long period of latency, and that they often begin as benign tumors, which are stationary for years or grow very slowly, and then increase with the greatest rapidity. Such seems to be the progress of some of the mammary tumors, notably certain adenomata, which occasionally lead astray the medical adviser respecting prognosis, for, the diagnosis having been made and the tumor growing slowly, its removal is condemned, or deferred until perhaps the disease has already become malignant. The recent advances in pathology and in surgical procedures are very likely to induce the majority of surgeons to modify their views in relation to the indication for operative intervention.

If it were generally known among intelligent people that many innocent tumors sooner or later become malignant, and that malignant tumors often simulate benign tumors and remain quiescent for a great while, the sufferers would unhesitatingly consent to the removal of these morbid growths in their inception, long before the possible advent of serious mischiefs, or when the cure might be effected by minor operations which would leave the smallest scars, especially in such parts as the face, neck, arms, or hands.

In the discussion of the initial question the following points will be considered: (1) The relative frequency of malignant and benign tumors, (2) the liability of the transformation of benign into malignant tumors, (3) the impropriety of delaying operative interference, and (4) the advantages of early operations.

1. The testimony of careful observers tends to show that the malignant exceed the benign tumors in frequency, and also that many malignant tumors remain stationary and seemingly harmless for one, two, six, eight years, or even for longer periods, then increase rapidly, and soon contaminate the system. Several modern writers have analyzed tumors on a sufficiently large scale to give some notion of the relative frequency of malignant and benign tumors. Mr. W. R. Williams's analysis of 11,100 cases of tumors shows fifty-three per cent. to be cancerous, and of these, twenty-four per cent. to be cancers of the breast. Dr. S. W. Gross cited 649 cases of mammary tumors. Of these 649 tumors, 587 were malignant and only 62 were benign. Of the 587 malignant tumors, 530 were carcinomata and 57 were sarcomata. Of the 62 benign tumors, 48 were inomata, 2 were adenomata, and 12 were cystomata. This excess of malignant over benign tumors noted by Dr. Gross corresponds with the observations of nearly all pathologists; but the proportion of adenomata stated by him is very small as compared with the experiences of other observers, although he afterward spoke of 5 adenomata examined by himself and of 13 examples which he had collated, making 18 additional cases. Among Mr. Williams's 11,100 tumors are 280 cases of breast adenoma to 68 cases of breast sarcoma and 1,439 cases of breast carcinoma—in all, 1,781 cases, with about sixteen per cent. of adenomata; while among Dr. Gross's cases there are 587 malignant tumors and 20 adenomata, making in all 607, with only about three per cent. of adenomata.

Sir Astley Cooper, who first described adenomata of the breast under the name of "chronic mammary tumors," regarded this disease as common, and reported a series of illustrative cases in his work on the breast. These were cases of circumscribed adenomata "upon rather than in the breast," the diffuse adenomata being those which are viewed as so rare by Broca and other writers. Is it not possible that this great rarity of diffuse adenomata may be more apparent than real, and that many of the excised carcinomata may at one time have been diffuse adenomata? This question can be definitely settled only when great numbers of breasts shall be excised much earlier than heretofore, or as soon as the first traces of disease can be discerned. If, then, it should be shown that diffuse adenomata are very frequent instead of being very rare, it would be fair to infer that most of the tumors formerly excised as carcinomata had probably begun as diffuse adenomata, and that something like prophylaxis of carcinomata might be effected by the early excision of diffuse adenomata. In such cases the entire breast would necessarily be removed, while in circumscribed adenomata the breast would be saved.

Respecting the age of individuals affected with adenomata as compared with that of cancerous subjects, Broca has compiled a very interesting table of cases reported by Lebert, Velpeau, Bauchet, and Rouyer. This table comprises 152 cases of tumors. Of these 152 cases, 62 were cancers of the breast; 90 were adenomata, and of the 90 adenomata, 70 were of the mammary, 11 of the parotid, and 9 of the palatine glands. Before the age of twenty there were 6 cases of mammary adenoma, 3 cases of parotid adenoma, 3 cases of palatine adenoma, and no case of mammary cancer. From the age of twenty to twenty-five there were 17 cases of mammary adenoma, 1 of parotid, and 1 of palatine adenoma, and no case of mammary cancer. From the age of twenty-six to thirty there were 9 cases of mammary adenoma, 1 of parotid and 1 of palatine adenoma, and 1 case of mammary cancer. From the age of thirty-one to forty there were 20 cases of mammary adenoma, 5 cases of parotid adenoma, 3 cases of palatine adenoma, and 12 cases of mammary cancer. From the age of forty-one to fifty there were 15 cases of mammary adenoma, 1 case of parotid and 1 case of palatine adenoma, and 21 cases of mammary cancer. From the age of fifty-one to fifty-five there were 3 cases of mammary adenoma, none of parotid or of palatine adenoma, and 12 cases of mammary cancer. Beyond the age of fifty-five there were no cases of mammary, parotid, or palatine adenoma, but there were 16 cases of mammary cancer.

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* Read before the New York State Medical Association, November 16, 1892.

Among the interesting features of this table are the following: There are in it no cases of cancer up to the age of twenty-five, 1 case between twenty-six and thirty, and 12 cases between thirty-one and forty, so that up to the age of forty there are only 13 cases of breast cancer to 52 cases of breast adenoma, while from the age of forty-one to fifty-five and upward the high figures are reversed and there are 49 cases of breast cancer to 18 cases of breast adenoma. This is in corroboration of the statement of Sir Astley Cooper and of other observers that circumscribed adenoma of the breast occurs with greatest frequency in early life—*i. e.*, between the ages of fifteen and thirty, while carcinoma is rarely developed before the age of forty.

Mr. Thomas Bryant, in his work on the diseases of the breast, gives the following analysis of one hundred cases of mammary "adenofibroma" observed by him, illustrating the ages at which they occur:

"Twenty-seven cases were first discovered between puberty and the age of twenty—*i. e.*, during the developmental stage of the breast's life.

"Thirty-five cases appeared between twenty-one and thirty years of age, or during the period of functional perfection.

"Twenty-two cases appeared between thirty-one and forty, during the period of its maturity.

"Thirteen cases appeared during forty-one and fifty, and 3 cases appeared in women over fifty, or during the period of its functional decline.

"Forty-six of these cases occurred in single women, 39 in the married and prolific, 15 in the married and sterile."

The question of the influence of sex upon tumor formation need not be discussed, as it is unnecessary to the purposes of this plea, but it may be of incidental interest to state the conclusion arrived at by statisticians, which is that of all cancers, sixty and even seventy per cent. occur in females.

Another item worthy of note is the rate of mortality from malignant tumors as compared with other diseases. In the discussion on tumors held during the fifth annual meeting of the New York State Medical Association, Dr. Alfred L. Carroll, formerly secretary of the New York State Board of Health, answered the question, "What is the rate of mortality from malignant neoplasmata as compared with other diseases?" and based his answer upon an examination of the mortuary statistics of the State of New York for the years 1885, 1886, and 1887, and said: "In these three years the deaths from all causes certified in the State at large amounted to 264,161. Of these, 6,262 were reported as due to 'cancer'—1 in every 42·2, or a little more than two and a third per cent." Dr. Carroll's computation gives a percentage of mortality from cancer only a little lower than that of the late Dr. William Farr, which was based upon the analysis of millions of deaths from all causes.

Aside from the consideration of the relative frequency of malignant and benign tumors, their discrimination, clinically, is often so difficult that surgeons are justified in advising immediate extirpation, and in relying upon the microscope to insure the diagnosis and establish the prognosis.

2. The liability to the transformation of benign into malignant tumors has long been recognized, but the histological demonstration of the phenomenon is modern. It has happened that some tumors have been excised during their transition from the benign to the malignant type and that this metamorphic process has been verified by microscopical examination of different parts of the growths. But so far it has not been possible to determine the precise time of the beginning of the transformation.

The clinical evidence that tumors, retaining the characters of benignity for a number of years, often suddenly acquire those of malignity, does not appear to have been questioned, and many surgeons, such as Broca, Verneuil, Richet, Labbé, Klebs, Billroth, Sir James Paget, Mr. Bryant, Dr. Gross, and others, have made valuabie contributions in the establishment of the law of metamorphosis of tumors. Among the early observations of the transformation of tumors were those of Sir Astley Cooper, who, in commenting upon "chronic mammary tumors," said: "Although these tumors are not in their commencement malignant, and they continue for many years free from the disposition to become so, yet if they remain until the period of the cessation of menstruation they sometimes assume a new and malignant action." While both the diffuse and circumscribed adenomata tend to carcinomatous transformation, those adenomata which contain an excess of fibrous tissue tend to sarcomatous transformation. The existence in the same breast of circumscribed and diffuse adenoma has been verified by Broca. The coexistence too of benign and malignant tumors in the same individual and even in the same organ has frequently been demonstrated and examples thereof have been given by several authors. The writer has observed a sufficient number of breast tumors with long periods of latency to warrant him in thinking that most of these may have been originally adenomata, and that probably many carcinomata begin as diffuse adenomata. Benign circumscribed adenomata of the breast recur after extirpation in a considerable proportion of cases, without, however, causing general infection; but those adenomata that have become malignant are soon followed by general infection, while most of the adenomata of internal organs are malignant from the beginning.

Modern writers on tumors agree that not only circumscribed adenomata, which so often remain stationary for a long time, but most of the other benign tumors are liable to become malignant. Thus warts, moles, and other growths upon the face or body have been observed to undergo cancerous metamorphosis many years after their appearance. The late Dr. A. C. Post cited the case of a patient who had a mole that underwent carcinomatous transformation forty years after it had been first noticed, and advocated the removal of "morbid growths which seem to be in themselves capable of no harm." Fibrous tumors are often transformed into sarcomata. Primary sarcomata are said to be rare, particularly in the breast, for, in the majority of instances, they are believed to begin as fibrous tumors which, remaining stationary for variable lapses of time, finally undergo sarcomatous transformation. In myxomata and myomata an accession of sarcomatous element is not infrequent, the tumors so metamorphosed being commonly named myxosarcoma in the one case and myosarcoma in the other case. Lipomata are sometimes metamorphosed into myxomata and sometimes into sarcomata. Some years ago the writer extirpated a large lipoma, nearly half of the bulk of which had undergone sarcomatous metamorphosis.

It is well known that when mammary adenomata become malignant such epithelial hyperplasia as may cause carcinoma does not always occur, for it sometimes happens that the regressive metaplasia is in the connective tissue framework of the acini and tubes, sarcoma being the result. This sarcomatous element generally invades the tumor only in part and constitutes a variety and not a new species, as, for instance, the so-called adenosarcoma, the malignant transformation occurring in the fibrous tissue, which is, perhaps, already in excess and not among the epithelia of the acini or of the tubes. So long as a tumor retains a comparatively high degree of organization it remains benign, but when its constituent tissues are disturbed there is apt to be an accession of tissues of a low grade of organization and the tumor becomes malignant; the lower the organization, the greater the malignity.

3. In setting forth the reasons why it is believed to be improper and unwise to delay operative interference for the cure of tumors, it may be well to include a brief statement of the principal methods of general and local treatment from time to time employed. Many surgeons, ever since the beginning of this century, have tried in vain both the general and local treatment of benign and of malignant tumors.

The general treatment has consisted in the administration of mercurial preparations, of potassium iodide, of purgatives, of hemlock, of red-clover tea, of thuya and hydrastis tinctures, of Chian turpentine, or of alkaline solutions, all to no purpose. There is no trustworthy evidence that a single case has ever been cured by these or by any other drugs. Those who stubbornly rely upon exclusive general treatment in the management of tumors only imperil the lives of their patients, for, thus allured, the sufferers temporize until it is too late.

Local medication leads to no better end, but is still resorted to by many because it has been advocated by some eminent surgeons who scarcely imagined what might be the extent of the mischief indirectly caused by this advocacy, although it was not without qualifications, and although most of them had afterward acknowledged the failure of local treatment by poultices, plasters, unguents, leeches, ice, etc., and had finally advised excision as the most rational mode of cure. Unfortunately, by the majority, the first statement only was read, copied, quoted, and acted upon without discrimination. The qualifications were unheeded, the repudiation was unnoticed, the evil of this essentially temporizing management increased, and the consequences were disastrous. Plasters, unguents, arsenical pastes, nostrums of all kinds, continue to be used, much to the detriment and suffering of the afflicted.

Mechanical compression was for a long time in great vogue, and is even now occasionally employed in the treatment of tumors and effected by means of adhesive-plaster strips, compressed sponges, tight bandaging, etc. More than seventy years ago its advocates went so far as to devise special instruments to compress breast tumors. Sir Astley Cooper recorded a case of mammary tumor treated by compression—at first, for several months, with adhesive strips, and afterward with a pressure instrument which "was worn during four months without advantage." The tumor then increased with great rapidity, and in the course of six months was excised, when it had attained a weight of nine pounds. Broca has resorted to compression in some cases of mammary adenomata and reported their diminution, and even believed that some of them had disappeared after a few weeks of compression, but the cases were not afterward observed long enough to decide the question of cure. The effect of compression was supposed to be absorption of the tumors, but there is no proof of such absorption of tumors. Cyst formation is known to be very common in tumors of the breast. Steady compression applied to these tumors sometimes causes a marked diminution of their bulk, and this diminution is generally owing to absorption of the fluid contents of the cysts, while the solid substance of the tumors remains intact. Soon after the cessation of the compressing force the cysts fill again, and then the tumor structure is liable to grow with increased rapidity.

For a century past eminent teachers have promulgated the idea that so long as a tumor is causing no apparent mischief, and shows no disposition to increase in volume, it should not be excised. This precept, regarded by many as conservative, is commonly followed to the letter in the management of new growths, even by some of the recent writers on the subject. Citations might be greatly multiplied, but brief extracts from two modern teachers will suffice. Dr. S. W. Gross, who advocated without qualification the early excision of breast adenomata, seems to have made an exception in the case of fibrous tumors, and said: "As fibrous tumors are absolutely innocent, if their true nature be determined, they may be let alone; but my advice is that they be extirpated if they begin to grow." It seems strange that the doctor should have sanctioned temporization in this case, as he was known to be a strong believer in the liability of the transformation of fibrous tumors into sarcomata. It is often so difficult, at the bedside, to determine the character of small mammary tumors that the risk of waiting until they begin to increase is such that those countenancing this delay assume an unenviable responsibility, for sudden increase in bulk of solid tumors is not unlikely to be the beginning of carcinomatous or of sarcomatous transformation. Mr. Bryant, in speaking of benign tumors of the breast, says: "It is not, however, necessary to remove every tumor of this kind as soon as it is discovered, for it may grow so slowly, and be so little in the way, as to render its removal a matter of small urgency. . . ." If the law of metamorphosis of tumors, which fixes no particular time for the beginning of the transformation of benign into malignant growths, is valid, the non-intervention implied by Mr. Bryant is scarcely safe. Those who uttered this precept of expectancy, and the others who accepted and followed it, do not appear to have given good reasons why a tumor which is stationary and apparently harmless, but liable to metamorphosis, should not be removed. In accordance with the light thrown of late upon the natural history of tumors, it is proper to inquire if this precept can be regarded as truly conservative.

The well-known fact that any solid benign growth is liable to become malignant should be sufficient to induce surgeons to condemn the arbitrary expectancy which is so generally counseled and which so surely leads to disaster. Even if a particular tumor increases without showing signs of malignity, there can be no advantage in waiting until it shall have attained a great size, as the larger the tumor the more formidable the operation for its removal. The advice that a morbid growth should not be removed because it is stationary and causes no inconvenience does not seem to be founded on sound principles. Because it does not produce present inconvenience gives no surety that it will not, sooner or later, cause the greatest distress, if only from its increase in size or its interference with a vital function; but the liability to malignant transformation is what is most to be dreaded. Therefore, as a general rule, it may be considered unwise to allow any accessible tumor to so increase in size as to be damaging to the individual or, if it be stationary, to wait until it is metamorphosed before proposing an operation for its cure. The true spirit of conservatism is manifested by advising the removal of a morbid growth when it is benign, when it is small, when it is stationary, when the operation for its eradication is trifling in comparison with what it must be when the tumor has attained a great size, or when the neighboring lymph glands are implicated. The modern improvements in inducing anæsthesia, simplifying surgical procedures, and insuring asepticism of wounds, render operations safe as compared with those of former times, so that no serious harm need now be apprehended from the extirpation of most tumors. Morbid excrescences of all kinds, being worse than useless to the human economy, should be treated like foreign invaders and removed before they become too mischievous.

4. Some of the advantages of the early extirpation of tumors have incidentally appeared in the discussion of the first three points, but their reiteration seems proper in the conclusion of the answer to the initial question.

There can be no reasonable doubt of the advantage of excising a small tumor believed to be malignant, even if this be owing only to the ease with which the operation can be executed, or to the slight degree of violence inflicted upon the parts as contrasted with the magnitude of the procedure needed for the ablation of a growth which has attained great dimensions or which has infected the adjacent lymph glands.

For a long time past there has been a prevailing belief that extirpation of a quiescent malignant tumor only serves to stimulate the extension of the disease. But this belief does not appear to have been founded upon trustworthy clinical observations or pathological data. It is undoubtedly true that any incomplete cutting operation upon a malignant tumor, or its partial cauterization with silver nitrate or arsenic, only serves to stimulate its extension, but complete extirpation, including the adjacent connective tissue, fascia, and lymphatics, does not leave behind any disease to be extended. Recurrence of the disease in this case would take place after cicatrization of the wound and would be by new cell-proliferation and not by extension. External cancerous tumors have been excised, and in the course of a few weeks the patients have died of internal cancer; but in these cases, if the internal had not antedated the external disease, the metastatic process had surely begun before the operation and would scarcely have occurred had the tumor been excised five or six months before.

The main question, however, relates more particularly to the early excision of benign tumors, of those of doubtful character, and of the potentially malignant tumors during the earliest period of their stage of benignity. It is in respect to the propriety of early excision of these several tumors that surgeons still differ in opinion. Since it appears, from analysis of the observations of surgeons of long and vast experience, that a large proportion of benign tumors in time become malignant, and that most malignant tumors have a stage of benignity, there should be no hesitation in advising the extirpation of these tumors as soon as discovered, and this advice may be regarded as the very essence of conservatism and of prophylaxis.

From a purely æsthetic point of view it is of no little consequence to minimize scars resulting from the excision of tumors of the face, neck, arms, or hands, particularly those occurring in the gentler sex, and this can be best accomplished by the timely removal of such morbid growths as are likely to increase to the extent of greatly disfiguring the patients. It should, however, be noted that almost any scar is better than an ugly tumor.

During the spring of 1892 the writer excised a superficial, circumscribed, ovoid, and lobulated mammary adenoma of two years' standing and only an inch and a half in mean diameter, from the upper and inner part of the left breast of a young lady of twenty-one. The wound, two inches in length, healed primarily. The scar is so situated as not to be visible when a low-necked dress is worn. The operation was performed thus early with the view of minimizing the scar and with due regard to prophylaxis. For many years past the writer, like others, has adopted the practice of excising such tumors as soon as discovered, and he has no doubt that thus many growths have been nipped in the bud which in time would probably have become malignant.

The nævi that appear upon the faces of infants, though benign, often grow so rapidly as to constitute serious disfigurement, and to require operations which leave extensive scars. If before these little vascular tumors cover a space of more than two or three millimetres they are promptly destroyed with the thermo-cautery, the ensuing scar is likely to be almost imperceptible. The operation is completed in a few seconds and the pain is very slight.

The greatest mischief arises from temporization in the case of small epithelial growths upon the lips. The adviser, perhaps uncertain as to the nature of the growth, waits until he can be sure of the diagnosis, suggests local remedies or sometimes even cauterization with nitrate of silver which causes the most rapid extension of the disease. There is then no doubt as to the character of the growth, for the ambient lymphatics are already involved. The tumor is excised, but too late, and the disease soon recurs. Any tumor of the lip of doubtful character should unhesitatingly be removed. As a general rule, the subsequent dissection and microscopical examination of the tumor shows the operation to have been justifiable. Early excision is the surest means of obtaining a long period of immunity from recurrence. In the experience of the writer, excision of labial epitheliomata has given immunity from recurrence varying from five to sixteen years. In some of the cases the operation was not performed as early as it would now be done, but they were all apparently free from lymphatic involvement. In a case of nasal epithelioma the exact period of immunity could not be determined. The patient was last seen nine years after the operation and was then well.

The period of immunity from recurrence of the disease after operation is very variable even in the same species of tumor, and is doubtless influenced by the time of the operation; the earlier the operation the greater the chances of prolonged immunity. In carcinoma the average period of immunity is stated by some observers to be three years and a half, and by others seven years. The extremes are three months and forty years. The writer has reported cases in which the periods of immunity varied from seven to forty years. A little reflection upon these facts naturally leads to a cautious prognosis in a large proportion of cases. As soon as a tumor recurs, when it is still small, painless, and apparently harmless, it should be extirpated. The moral effect of this timely operation is generally good, bodily comfort is thereby promoted, and life is prolonged. It is therefore wise to operate as often as the tumor recurs. Dr. Valentine Mott reported a case of recurring "malignant sarcoma" of the side that had been extirpated fifteen times in twenty-three years. For the first twenty years eight operations were performed upon the man, and the intervals of freedom from the disease averaged three years. During the remaining three years of his life seven operations were performed, and the intervals averaged four months. Dr. S. W. Gross recorded a case of recurring sarcoma excised by his father twenty-three times in four years. The woman was alive and in good health ten years and nine months after the last operation. Mr. Bryant cites a case of lipoma over the left hip, "atrophic carcinoma" of the left breast, and sarcoma of the right breast in a woman sixty-four years of age. He removed the right breast, and in about six months there was a recurrence of sarcoma in the scar. In the course of four years and a half from the first operation the disease had recurred in all sixteen times, and sixteen operations were performed for its cure. At last accounts the patient's general condition was good. The carcinoma of the left breast and the lipoma of the hip were not excised. The annals of surgery of all countries contain reports of cases of undoubted malignant tumors, after whose excision the periods of immunity from recurrence have varied from ten to thirty-five years.

Malignant tumors of long bones or of their periosteum, such as sarcomata, demand the most prompt and radical operations. Nothing less than the amputation of a limb offers the slightest chance for any prolongation of the period of immunity from recurrence of the disease. Circumscribed tumors, however, in the soft parts of a limb may sometimes be enucleated without impairing the usefulness of the limb; and, if the operation be performed at the earliest period of the manifestation of the disease, there may be no recurrence for a long time, or there may be a permanent cure, as in the case of a benign fibrous tumor.

According to the observations of many experienced surgeons, the average duration of life is a little less than three years from the first appearance of the tumor in cases of breast carcinomata that have not been subjected to any treatment. Does this not indicate the wisdom of prompt action in the great majority of cases, since the shortest average duration of life after operations which were not performed during the stage of benignity of the tumors is three years and a half, and since it has been shown that early operations afford the best chance for many years of immunity from recurrence?

Very large tumors are now rarely seen in comparison with the great numbers recorded before the introduction of ether, nitrous oxide, and chloroform as anæsthetic agents. The dread of surgical operations was formerly so great that patients were ready for the use of any means proposed rather than the knife, although many of the modes of treatment employed were cruel in the extreme, far exceeding any torture that could have been inflicted with cutting instruments. At length, when every method of cure failed and the tumor had attained great dimensions or was in a state of ulceration, the knife was used as the last resource, sometimes successfully, but generally without avail. The excision of breast tumors of fifteen and twenty pounds weight, and of fatty tumors of twenty and thirty pounds, was not an uncommon operation. Fibrous tumors weighing one hundred pounds and more were then often excised. Thanks to the several modern modes of inducing anæsthesia, the patients of to-day need have little fear of the knife, for they are assured that they will be rendered insensible to pain during and for a time after operation. The surgeon, conscious that he is inflicting no pain, is then able to give his whole attention to the work in hand, and performs the operation in accordance with the recent improvements in surgical procedures and with the best modes of insuring asepticism of the wound.

The categorical answer to the initial question is that at the earliest period of the development of any accessible tumor its complete extirpation is not only justifiable, but should be regarded as an eminently conservative and equally humane act.

The results of the examination of the four points proposed for consideration in the discussion of the initial question may be summarized as follows:

1. Malignant tumors exceed benign tumors in frequency.

2. The malignant tumors comprise epitheliomata, sarcomata, and internal adenomata.

3. Among the benign tumors myxomata and external adenomata often recur after excision, but do not infect the system.

4. There is no solid benign tumor that may not become malignant.

5. No means are known by which can be ascertained the precise time of the beginning of metamorphic action in tumors.

6. Most malignant tumors have a stage of benignity.

7. Excision of potentially malignant tumors in the early epoch of their stage of benignity is likely to effect a permanent cure, or at least to prolong greatly the period of immunity from recurrence of the disease.

8. In the excision of malignant tumors the greatest care should be taken to remove as much of the ambient tissues, including fasciæ and lymph glands, as compatible with good judgment.

9. General treatment of tumors has no value except as an adjuvant of a surgical operation, and is often indirectly injurious, leading the patient to expect a cure by persevering in the use of drugs, and thus allowing the disease to make rapid progress toward a fatal end.

10. Local treatment of tumors, by means of escharotic plasters, pastes, or powders, is the most fruitful in evil of all the devices for the torture of the afflicted. The plaster, paste, or powder causes the greater part of the tumor to slough, but there is enough left behind for the most rapid extension of the disease. The effect of the escharotic is, therefore, only to till a soil where new growths sprout like so many seeds cast upon rich loam.

11. Compression is delusive in the case of tumors containing cysts, and is directly hurtful by exciting the rapid growth of most tumors.

12. Expectancy, even in the case of benign tumors, is as unwise as meddlesome medication.

13. There should be no waste of time in endeavoring to make a precise diagnosis of a particular morbid growth, for after its excision the microscope reveals the nature of its constituent elements and assists in the establishment of the prognosis, which is the question of greatest importance to the sufferer.

14. What is known of the great fatality of tumors of long standing should induce surgeons to advise the complete removal of all accessible morbid growths as soon as detected, no matter how seemingly trivial or harmless, such as small glandular, fatty, fibrous, and vascular tumors, wens, warts, moles, etc.

15. As soon after excision and as often as a tumor recurs it should be removed, so long as there is any possibility of insuring cicatrization of the wound, even by skin-grafting.

16. Medicinal treatment after the excision of malignant tumors is of much value, even if it consists only in the administration of reconstituent medicines.

STUDIES IN AEROTHERAPEUTICS.

By SAMUEL S. WALLIAN, A. M., M. D.

III. HYDROGEN DIOXIDE.

Synonyms: Peroxide of hydrogen; binoxide of hydrogen; deutoxide of hydrogen; oxygenated water. French: L'eau oxygéné; hydrogène dioxyde. German: Wasserstoff-superoxyd. Symbol, H_2O_2. Specific gravity, 1·453.

Without stopping to consider its ultimate relations and reactions, it would seem to be a misapprehension or a physical inconsistency to classify this compound with aeriform bodies, since it is usually recognized and dealt with as a liquid only, notwithstanding the fact that it occurs and is constantly produced in minute quantities by natural processes in the form of impalpable vapor. But when it is remembered that it has little or no value or effect, either as a prophylactic, therapeutic, or chemic agent, until by chemical decomposition it yields one equivalent of its oxygen in a free, gaseous, and intensely active condition, the apparent inconsistency disappears.

First definitely identified by Thenard in 1818, this product of the laboratory—which, however, as already intimated, is also constantly evolved by strictly natural causes in certain localities—is quite unique, resembling nothing else in nature, and being unlike any other product of the chemist's art. In its physical characteristics and vital reactions the only substance or element which it resembles is ozone, and in its ordinary physical condition it is quite unlike this peculiar agent.

In its pure and undiluted state it is of a syrupy consistence, has a specific gravity nearly one half greater than that of water, and is of such an extremely unstable nature that it decomposes on the slightest provocation, such as slight change of temperature, agitation, or metallic contact, and sometimes this change occurs with explosive violence. On decomposition it yields free and active oxygen and simple water.

The variety of names used to designate this product is decidedly confusing to beginners, and it is to be hoped that a uniform nomenclature will soon be recognized and adhered to. Chemists formerly called binoxide of hydrogen, or oxygenated water; ordinary water, under the same system of nomenclature, being protoxide of hydrogen. The name peroxide, by which it is now generally and popularly known, is one of those persistent inaccuracies and inconsistencies with which modern scientific and pseudo-scientific literature is still, to some extent, encumbered. The term peroxide should never have been introduced into chemical literature at all, since of itself it does not indicate any definite degree of oxidation. It is presumed to describe the highest possible degree of oxidation, in case of the particular element under consideration, and may therefore indicate in one case a dioxide, in another a teroxide, tetroxide, or possibly a pentoxide, according to the degree of oxidation to which any particular substance or element can be carried.

The highest known oxide of hydrogen is the dioxide or binoxide. It was therefore, in accordance with the prevailing practice, called the peroxide, and, as already stated, is better known by this unscientific and inaccurate name than by its proper chemical title, hydrogen dioxide. Under the old system of nomenclature, the modern changes in which are confusing to those who conned their chemistry lessons a quarter of a century ago, water was represented by the symbol HO, and the compound under consideration by HO_2. The present system writes H_2O for common water, and H_2O_2 for hydrogen dioxide.

As regards physiological effects and some of its chemical reactions, hydrogen dioxide is so closely allied to ozone that it has been plausibly maintained that one is merely a liquid and possibly allotropic condition of the other. The two substances similarly affect both the iodide of starch and thallium test-papers. The seeming contrast in the physical conditions, one being recognized as uniformly a liquid and the other as a gaseous body, may in reality be more apparent than real, since ozone, according to Mulvany, prevails only in moist atmospheres, and may therefore plausibly be presumed to exist in the form of suspended and impalpable vapor, or, next to that, as hyperactive (condensed) oxygen at the instant of its evolution through the decomposition of hydrogen dioxide, which latter is undoubtedly always present to some extent in the form of vapor in all moist atmospheres. In fact, it is not a scientific exaggeration to assert that the atmosphere itself is at all times but a vast aerial ocean (Ewing), varying from time to time in the degree of its aqueous permeation or paucity, as the case may be—a condition usually referred to as that of relative humidity.

Recent medical writers, in their casual references to hydrogen dioxide, are quite inclined to carelessness of statement, especially as to volumetric strength. Thus one writer, himself the associate author of a recent work on materia medica, which makes his blunder wholly inexcusable, advises its use "of full strength," which means anything or nothing, according to the understanding or preconceptions of the reader. It is to be presumed that he intended to say it might be used of the full strength of whatever solution he had been in the habit of receiving from his pharmacist; which, judging by samples obtainable in the market, might vary all the way from five to fifteen volumes, according to the brand selected, or according to its age. Too many reporters on the use of this agent also disclose the unmistakably commercial bias of their inspiration by over-enthusiastic mention of some particular preparation, after the generally transparent manner of proprietary puff-writers. In fact, modern medical literature is getting to be very liberally padded with this sort of semi-quackery. In the face of the existing confusion a word as to volumetric strength will not be out of place.

Pure and undiluted hydrogen dioxide, on being entirely decomposed, is found to yield four hundred and seventy-five times its own volume of oxygen, leaving behind one volume, or nearly one volume, of water. In this state it can be handled or retained only by being excluded from light and kept below freezing point; hence a so-called "pure," undiluted, or "full-strength" preparation of this product is unknown in the market. Nor is it ever chemically or therapeutically desirable, since in this concentrated form it can not be used for any practical purpose whatever. For pharmaceutical purposes a fifteen-volume (about three per cent.) solution is as strong as is either desirable or available. Very little of that in market will test above ten or twelve volumes, and much of it is as low as four or six. In fact, some manufacturers do not attempt to supply a solution exceeding ten volumes (about two per cent.) in strength. For a majority of therapeutic uses even this strength requires further dilution. Richardson suggests that a ten-volume solution be made the standard.

Preparation.—To prepare absolutely pure hydrogen dioxide, in solution, Crismer (*Bull. de la Soc. chim.*, Paris) recommends the following:

Binoxide of barium is mixed with distilled water to the consistence of thin milk. Decomposition is induced by the addition of hydrochloric acid of the specific gravity of 1·100. By the addition of ether and agitation, a portion of the resultant dioxide of hydrogen is dissolved out. This is to be separated and shaken with pure water, to which it yields a portion of the desired product. The remaining ethereal solution is again separated and brought in contact with a fresh portion of barium solution. The whole operation is to be repeated several times, which will afford a solution containing from one half to one per cent. of perfectly neutral hydrogen dioxide, free from chlorine and all other constituents except a small quantity of ether, which is presumed to aid in imparting stability to the product, but which may be removed by distillation *in vacuo*, if for any special reason it is deemed objectionable. Prepared in this way, the product is comparatively stable, but is subject to gradual deterioration, or rather to slow decomposition.

According to Gmelin, the original theory laid down by Thenard is, that the "peroxides" of any of the alkaline minerals—barium, calcium, potassium, sodium, or strontium—may be used in producing hydrogen dioxide by being digested "in any hydrated acid which forms a soluble salt with the salifiable base resulting from the decomposition of the peroxide," since the released oxygen does not escape as gas, but unites with a portion of the water, and thus "converts it into peroxide of hydrogen."

Practically it has been found that the binoxide of barium answers the purpose best; hence this chemical is generally, if not universally, employed. The original process consists in diluting fourteen parts of pure hydrochloric acid with nine hundred and sixty parts of distilled water. Thirteen parts by weight of pure baryta, finely pulverized, are to be dissolved in this solution, which is to be thoroughly stirred with a glass rod or wooden ladle during the process. Chemical reaction ensues, by which the binoxide is changed into soluble chloride of barium. The barium should be first reduced to the consistence of a thin paste, all utensils employed in the entire process being of glass, glazed or enameled ware, or wood. By the above-described manipulation sufficient oxygen will have been liberated to charge the water menstruum to about one volume strength ($\frac{1}{475}$) of hydrogen dioxide, but the product is encumbered with all the chloride of barium evolved by the process. Dilute sulphuric acid (1 to 4) is now to be slowly added and the mixture thoroughly agitated or stirred, which results in precipitating the barium in the form of an insoluble sulphate, and leaves the hydrochloric acid free. The solution is now to be decanted, a fresh portion of barium paste added, and the process repeated until the desired volume of strength has been obtained. Beyond eight or ten volumes' strength, which is sufficient for most purposes, further concentration may be accomplished by gentle evaporation.

To remove the free hydrochloric acid, sulphate of silver is slowly added, forming chloride of silver, which is precipitated, leaving free sulphuric acid in the solution. The product is now to be decanted and treated with barium until all the sulphuric acid is fixed and deposited as insoluble sulphate. Again decanting and carefully filtering, the result is an approximately pure and neutral product. Richardson asserts that the removal of the free hydrochloric acid is hardly necessary, since the relatively small percentage of it is but a slight disadvantage, therapeutically considered, and that its presence adds to the stability of the solution.

Coming from the source it does, this statement is a surprise, since it is unquestionably a chemical mistake. From the predominance of distinctly acid solutions in the market, it is evident that some manufacturers are very glad of this eminent and well-meant but delusive indorsement of their incomplete methods.

Again, to conceal defects of manufacture and render their imperfectly purified product more perfectly transparent and brilliant in appearance, it is asserted that some unscrupulous manufacturers regularly add a certain percentage of alum, and in some cases even oxalic acid, to the dioxide solution.

Such adulterations are simply criminal, and it is no doubt due to their presence that unexpected and disastrous results have occasionally followed the clinical exhibition of this agent.

Another process of manufacture, recommended by Pelouze and called the direct method, consists in treating binoxide of barium with a solution of hydrated hydrofluoric acid. The resulting reaction includes the decomposition of the barium, the formation and precipitation of fluoride of barium, the liberated oxygen of the decomposed salt combining with a portion of the water to form dioxide of hydrogen, as in the processes already described. This process is highly esteemed for preparing the commercial article on a large scale.

Value and Uses.—Inferentially it may be safely asserted that any therapeutic agent or preparation which, in spite of the preponderance of indifferently good and even absolutely bad samples in the market, can acquire and retain the reputation now held by the product under consideration, must possess positive, inherent, and extraordinary therapeutic merit. Certainly no higher encomium or evidence of substantial value could be adduced for this unique preparation than that it has compelled almost universal professional recognition, and is now being used in almost incredibly large quantities, compared with the limited demand of even five years ago. It would therefore be difficult to predict the future of this agent.

It is now extensively advertised, and one can hardly refer to the medical journals without finding enthusiastic recommendations of it as a disinfectant of rare efficiency, an antiseptic of recognized merit, and a germicide of decided potency. As a germicide, Miquel places it third on the list, only the biniodide of mercury and the iodide of silver surpassing it in this direction. It is also a reliable sporicide, and at the same time it is non-toxic and non-corrosive—qualities possessed by few if any of the other sporicides yet brought to notice.

As already intimated, its therapeutic value is wholly due to the liberation of its extra atom of oxygen, which, derived from this source, is found to be in an exceedingly active condition approximating ozone. Freed from its loose combination with the hydrogen base, this ozonized atom promptly attacks every form of germ life, decaying organic particles, pus, or foul secretion with which it is brought into close contact, effectually sterilizing or destroying it by a process of rapid and complete oxidation. Nothing could be simpler in action or more satisfactory as to results. Its decomposition leaves behind simple water only, hence there is no reaction following its use and, even in case of the most sensitive surfaces, no irritation worthy of the name; in fact, its immediate effect is that of a moderate analgesic. It as promptly allays the pain and excessive irritability so uniformly present in carbuncle, whitlow, phlegmon, and irritable ulcer, as if it were really an anodyne; and it may be used with the most lavish excess without the remotest danger of hurtful absorption or toxic after-effects.

It is evident that an agent possessing these indicated properties is susceptible of innumerable uses and applications; in short, that its range of applicability in medicine and surgery is practically unlimited. It cleanses and disinfects foul wounds and ulcers promptly and thoroughly; it is a satisfactory application to some forms of abrasions, and to abscesses and ulcers of every description. In acne, topical applications, repeated several times a day, have given excellent results. As a mouth wash it proves effective in aphthæ, and it will frequently abort herpes labialis and hordeoli if freely applied two or three times, at short intervals, during the threatening stage. It is a reliable application in all cases of stings and bites of insects, dissection wounds, and blood poisoning from any cause. Used as a spray and by inhalation, either from a nebulizer, vaporized by heat, or by means of an inhaler to be mentioned further on, it adds greatly to our resources in amygdalitis, pharyngitis, laryngitis, and bronchitis; and in diphtheria it destroys the infection and removes the membrane more certainly, speedily, and safely than any other known solvent which is at the same time a disinfectant. In hay fever and whooping cough it has been lauded by several observers of note as next thing to a specific. It is used with brilliant results in the various forms of ophthalmia, blepharitis, corneitis, conjunctivitis, etc., and does excellent service in chronic cystitis, cervical catarrh, and leucorrhœa. It is enthusiastically recommended by several writers in all stages of gonorrhœa, but is undoubtedly most valuable in the later and chronic stages. In otorrhœa and subacute and chronic otitis media it is highly extolled by Dayton and others who have experimented with it in these cases. Topically applied, mixed with pure glycerin, it arrests gangrenous suppuration and promotes healthy granulation.

Its disinfectant properties are very pronounced in all forms of eruptive fevers and infectious diseases. Freely spraying the room with a ten-volume solution will destroy all foul odors and act as an important auxiliary to other measures. By means of a spray apparatus it may be made to supply active oxygen to the apartment, and to largely obviate the disastrous results of imperfect ventilation.

Internally it has been resorted to by Le Blond and others in diabetes, but not with the success which was theoretically anticipated. Temporarily, it lessened the quantity of sugar, but the effect was neither uniform nor permanent. This failure has been the subject of considerable speculation, and is a marked illustration of the apparently unaccountable variation in therapeutic action manifested by the same agent or element under slightly different physical, chemical, or dynamic conditions. Thus Le Blond and his *confrères* found that although hydrogen dioxide, exhibited internally in diabetes, failed to oxidize and eliminate the saccharine element in the blood, a result which they had confidently predicted, oxygen, exhibited by other methods, especially in the form of oxygenated water—*i. e.*, distilled water charged with several times its bulk of pure oxygen, under pressure—promptly corrects the diabetic tendency, and in a large percentage of the cases causes the sugar to entirely disappear, this effect being readily maintained.

In fermentative or flatulent indigestion and in chronic gastric catarrh its internal use has been followed by decidedly favorable results, since it promptly checks yeasty and acid fermentation and cleanses the lining membrane of the stomach from the tenacious mucus which so seriously interferes with both digestion and effective medication. In catarrh of the lower bowel, and especially of the rectum, it has proved of great value. It is to be used both internally and by enema, first being reduced to a strength of from one to five volumes (0·2 to 1 per cent.) or less. In all accessible passive hæmorrhages it has been found to act as a hæmostatic, doubtless from its action in coagulating fibrin; hence it may be tentatively administered internally in hæmatemesis, inhaled in the form of nebulized vapor in pulmonary hæmorrhage, or injected in cases of hæmaturia and hæmorrhage of the lower bowel. Spraying the post-nasal passages with a one- to two-per-cent. or stronger solution will generally check epistaxis, even of severe type. Considerable relief follows its use in gastric ulcer, and also in carcinoma of the stomach. In ozæna it is a readily available detergent and disinfectant, admirably preparing the diseased surfaces for the effective application of other remedies. In rectal and uterine cancer it is invaluable, relieving pain at the same time that it cleanses and disinfects the parts. As a source of free oxygen for use by inhalation it is available in asthma, cardiac dyspnœa, bronchitis, pertussis, phthisis, and many other conditions and emergencies. Richardson has devised a very convenient apparatus for its administration in this form, consisting of a large glass vessel, tubulated, and having a wide mouth into which a perforated cork is fitted for holding the solution of dioxide, and a second smaller vessel with an outlet tube projecting from the bottom and provided with a stop-cock. The outlet tube of the second vessel is to be inserted into the perforated cork, and this receptacle is to be partly filled with a saturated solution of permanganate of potassium. To the outlet tube of the larger vessel is attached an inhaling tube and double-valved mouth-piece. When in use the permanganate solution is allowed to trickle slowly into the dioxide solution contained in the lower vessel. The evolution of ozonized oxygen is thus immediately induced, and may be readily controlled. By means of this apparatus combinations of almost any of the volatile medicaments may be made, such as ether, nitrite of amyl, etc., with oxygen, and the effect thereby greatly enhanced. Richardson enthusiastically recommends the combination of oxygen and ether ("ozonic ether") for producing safe anæsthesia, claiming that the necessity for removing the mouth-piece or inhaler from time to time during the operation is entirely obviated, the patient constantly receiving a sufficient supply of oxygen to prevent all danger of asphyxiation.

The same authority recommends many mixtures for internal administration, the following being representative samples of his formulæ:

(1) ℞ Sol. hydrogenii dioxid. (10 vols.)..... ℥ ijss.;
Acidi sulph. dil.................. ʒ jss.;
Glycerini........................ ℥ jss.;
Aquæ dest.....................ad ℥ vj.
M. Sig.: Dose, one ounce, well diluted.

This he has found an excellent mixture in the colliquative sweating in phthisis.

(2) ℞ Sol. hydrogenii dioxid. (10 vols.)..... ℥ ijss.;
Quininæ bisulph.................. gr. vj;
Acidi hydrochlor. dil.............. ♏ xx;
Glycerini........................ ℥ jss.;
Aquæ dest.....................ad ℥ vj.
M. Sig.: Dose, one ounce in iced water.

(3) ℞ Sol. hydrogenii dioxid. (10 vols.).... ℥ ijss.;
Liq. morph. hydrochlor............ ʒ j;
Syr. Tolutan..................... ʒ vj;
Glycerini........................ ℥ ijss.;
Aquæ dest.....................ad ℥ vj.
M. Sig.: Dose, one ounce, diluted with iced water.

Excellent in asthenic bronchitis and in phthisis with severe cough and sleeplessnes.

(4) ℞ Sol. hydrogenii dioxid. (10 vols.).... ℥ ijss.;
Syr. codeinæ..................... ʒ ij;
Sp. vini rect.,
Glycerini, ...āā ʒ vj;
Aquæ dest.....................ad ℥ vj.
M. Sig.: Dose, one ounce in iced water.

A palliative of pronounced value in diabetes, giving much better results than codeine alone.

(5) ℞ Sol. hydrogenii dioxid. (10 vols.).... ℥ ijss.;
Acidi phosphorici dil.............. ʒ j;
Syr. ferri superphos.............. ʒ vj;
Glycerini........................ ℥ j;
Aquæ dest.....................ad ℥ vj.
M. Sig.: Dose, one ounce in iced water.

Recommended in all asthenic cases in which iron, phosphates, and oxygen are indicated. Used with marked advantage in the early stages of phthisis.

Many other mixtures may be made, including strychnine, nitrite of amyl, quinine, caffeine, etc., but the foregoing are sufficiently suggestive.

Richardson highly extols the mixture referred to as "ozonic ether," which is prepared by mixing a thirty-volume, or the strongest obtainable, solution of hydrogen dioxide with anhydrous ether, and adding five per cent. of alcohol. This is to be administered in water, in doses of half a drachm to two drachms, and may be applied topically in the form of spray. In pertussis, he claims, no remedy is more effective than the following mixture:

(6) ℞ Ætheris ozonici.................... ʒ iij;
Syr. Tolutan....................... ʒ vj;
Glycerini.......................... ʒ iv;
Aquæ dest.....................ad ℥ vj.

M. Sig.: Dose, one ounce in iced water.

He also uses dioxide of hydrogen as a substitute for iodides and mercurials, as follows:

(7) ℞ Sol. hydrogenii dioxid. (10 vols.) .... ℥ iijss.;
Liq. potassæ....................... ♏ xxx;
Glycerini.......................... ʒ vj;
Aquæ dest.....................ad ℥ vj.

M. Sig.: Dose, one ounce in cold water, to be pushed until ptyalism is induced.

From the foregoing it will be evident that this agent can be readily adapted to very many morbid conditions in connection with which no mention of it has yet been made by any writer.

As a prophylactic it may readily be adapted to numerous and important uses. Its marked antifermentative power makes it available as a sterilizer of both water and milk. Uffelman, Paul Bert, Von Tromp, Althoefer, and others have investigated it in this direction with very gratifying results. As an outcome of their exhaustive tests, which it is unnecessary to describe, it was found that "all impurities and pathogenic microbes in surface, river, or well water can be totally removed and destroyed in twenty-four hours by using one part of hydrogen dioxide to one thousand parts of water." *

A drachm or two to the quart will effectually sterilize milk—a method which has some advantages over heat. Added to new milk, it decidedly retards lactic fermentation.

Uses in Dental Surgery.—By the use of hydrogen dioxide the dental surgeon can accomplish results of which he did not dream before its properties had been demonstrated. It will cleanse and render aseptic the foulest cavities, without irritation or injury to the adjacent tissues. Through its action as an analgesic, a sensitive pulp or cavity can be treated and filled at the same sitting, instead of requiring, as heretofore, several days of preparatory treatment. It is also availed of in treating alveolar abscess, abscess of the antrum, as an injection into the pockets of pyorrhœa alveolaris or Riggs's disease, and for bleaching pulpless and discolored teeth. In the language of one of the profession, treating of dental surgery: "The introduction of H_2O_2 in our practice is revolutionizing the treatment of the foregoing diseases, as it is likely to do the various departments of ophthalmic, aural, and genito-urinary surgery." *

Practical Tests.—The instability of the article usually found in the market (and this applies to nearly all of the brands offered, as will appear from the report of samples tested given below) is a serious drawback to its more general employment, both on account of the varying and uncertain strength of different samples, or of the same sample from day to day, and on account of making it practically much more expensive than it should be. Nor are the precautions of tight corkage and cool storage, especially the former, of any avail. If decomposition is taking place, confining the released oxygen by a stoutly-wired-in cork does not materially hinder the process. Using non-actinic glass bottles as containers, and secluding from the action of strong light, are, however, valuable aids in its preservation. The question of the kind of cork to be used is of some importance. Rubber is somewhat expensive, if strictly "pure gum" is used, and I have thought this usually unexceptionable substance seems to excite more or less tendency to decomposition. Scrupulously clean, ordinary cork, of the finer or "velvet" variety, it is claimed by some, exerts the least effect on the solution. But the best of ordinary cork is quickly bleached and finally softened by the action of the solution. Ground glass stoppers are both effective and unobjectionable, except on account of cost.

Hyperacidity is an equally prevalent and even more serious fault. The pure product yields a slightly or apparently acid reaction, reddening, or rather bleaching, sensitive litmus paper; but, notwithstanding Richardson's assertion to the contrary, the presence of any excessive or, in fact, of any marked free acidity whatever, renders it more or less obnoxious and irritating, whether designed for internal or external exhibition.

As insisted by those scientists who have been foremost in urging professional recognition of the claims of this agent, it should be practically neutral and almost as bland and non-irritating as pure water. Chemically speaking, one litre of a fifteen-volume solution of H_2O_2 should be completely neutralized by five or six cubic centimetres of the U. S. P. standard (ten per cent.) solution of ammonia. If it still shows reaction on blue litmus, it is conclusive evidence that the sample contains an excess of free acid. A perfect article for medicinal use leaves a somewhat unpleasant sensation in the throat, but should not impart a sense of sharpness or decided acidity to the taste. It may be described as having a faintly metallic taste, such as is experienced on touching the tongue or lips to an electrode connected with a mild galvanic circuit. A harsh, sour, or astringent sensation in the mouth indicates the presence of free acids, alum, or some other foreign ingredient.

The alkaline impurities most likely to be found in samples tested are calcium, magnesium, barium, and strontium. One or more of these earths, or some compound of them in solution, may exist in any given sample without in any way interfering with its general appearance or lessening its transparency. To detect these, first add to a small quantity of the samples, in a perfectly clean test-tube, a few drops of phosphoric acid and agitate briskly. This will insure a thorough solution of any merely suspended or deposited particles. Then neutralize this solution by adding ten to twenty drops of strong ammonia and agitating. Effervescence will ensue, showing the evolution or liberation of oxygen, and if any of the suspected earths or salts be present, a flocculent cloudiness will appear, and on standing will be deposited. If the sample is entirely free from these impurities it will remain perfectly clear, while the evolution of oxygen will slowly proceed. If the sample is already decidedly acid, the addition of the phosphoric acid may be omitted, and ammonia alone used in making the test. The exact quantity of free or combined acid existing in any test-sample may be determined by neutralizing a given quantity with ammonia or carbonate of sodium, and noting the quantity of the latter required, as in case of any solution of acids.

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* *Ctrlbl. f. Bacteriol.*, July 10, 1890.

* Harlan.

Volumetric Strength.—Considerable vagueness exists in the minds of professional men and others as to the practical meaning of this term. It may be well to repeat that, for example, a ten-volume solution of H_2O_2 means that one pint or unit of such solution, on complete decomposition, will yield ten pints or units of gaseous oxygen, and that the percentage of strength indicated by designated volumes may be found by annexing two ciphers to the number of volumes named, and dividing this number by 475, the number of volumes of oxygen which pure or undiluted H_2O_2 will yield when entirely decomposed. Thus, a fifteen-volume solution $= \frac{1500}{475} = 0{\cdot}03157+$, or not quite three and one sixth per cent. in strength:

To test the volumetric strength of any sample of this product the following is perhaps the simplest method of procedure; and while for certain reasons it is not technically accurate, it is closely approximate, and practically all that could be desired.

A standard solution of potassium permanganate is made by dissolving four grammes of this salt in a litre, or in the proportion of one part in two hundred and fifty, of distilled water. In a glass or porcelain vessel of about one pint capacity put eight or ten ounces of water (distilled if convenient), and, having acidulated it with twenty or thirty drops of sulphuric acid, add, by means of a graduated pipette, exactly one cubic centimetre of the sample to be tested. Then, from a graduate accurately marked in cubic centimetres, slowly add the permanganate solution, stirring the mixture constantly with a glass rod. The purple color of the permanganate solution will for a time entirely disappear. As soon as any color remains in spite of thorough stirring, stop the pouring and note exactly how many cubic centimetres of the colored solution have been required or decolorized. This number will indicate the approximate volumetric strength of the sample. Thus, if in testing any given brand it requires twelve cubic centimetres to reach the above-described result, the sample is twelve volumes strong. In other words, it will require one cubic centimetre of H_2O_2 of one-volume strength to decolorize one cubic centimetre of the standard permanganate solution; and one cubic centimetre of a ten-volume solution of H_2O_2 will decolorize ten cubic centimetres of the standard permanganate solution.

A test of the volumetric strength of any sample of hydrogen dioxide, which is said to be much more reliable and accurate than the foregoing, is as follows:

The sample to be tested is placed in an accurately graduated test tube into the mouth of which is fitted a cork perforated to receive two small glass tubes. Into one of these perforations is to be inserted a bent glass tube which conducts evolved gas to a graduated bell glass over a pneumatic trough. A rod or tube loaded with platinum black is passed into the dioxide through the second perforation in the cork, when decomposition of the solution rapidly ensues. The escaping gas is collected in the bell, and affords an accurate and reliable measure of the proportion or volume of oxygen contained in the sample.

Applying the various tests above suggested, the following table illustrates the wide variation in strength, purity, and stability of nine of the different brands now to be found in the American market. All the samples used were procured directly from the manufacturers, or from the houses whose labels they contain, and were tested immediately, so that all might have an equal showing as to freshness.

It is my observation that as the article has increased in popularity some manufacturers have apparently relaxed vigilance and allowed their product to deteriorate in quality. Samples of some of the older brands, clinically tried by me eight or ten years ago, from results observed, I can not help thinking were certainly much better than the same brands as now sold:

Table of Comparative Tests of Various Samples of Medicinal Hydrogen Dioxide, procured directly from the Manufacturers or their Authorized Agents.

No. of sample.	STRENGTH IN VOLS., PERMANGANATE TEST.			QUANTITY OF EARTHY SALTS PRESENT.		C. c. of standard solution of ammonia required to neutralize 1 litre.	Manufacturer's or vender's label.	Strength claimed, vols.
	Fresh sample.	After 3 weeks.	After 6 months.	Magnesia and alumina.	Other earthy salts.			
1	8¼	3½	½	None.	Large.	30	Merck's "Medicinal," Darmstadt.	10
2	13½	6⅞	1½	Trace.	Moderate.	100	Marchand's "Medicinal," New York.	15
3	1½	½	0	Small.	Large.	150	McKesson & Robbins, New York.	10
4	15	14¾	11½	None.	None.		Oakland Chemical Company, New York.	15
4, *a.*	15	13	9½			*a.*	Do. do. do.	15
5	13	8	1¾	None.	Small.	7½	Bené's "Standard," Brooklyn, N. Y.	15
6	8½	8	2	Small.	Moderate.	20	Powers & Weightman, New York and Philadelphia.	No claim.
7	7	6¾	3	None.	Moderate.	8	Mallinckrodt Chemical Company, St. Louis, Mo.	15
8	3½	3⅛	1	Large.	Large.	10	Peuchot, New York.	10
9	11½	11½	....	None.	None.	3½	Larkin & Scheffer, St. Louis, Mo.	10

From the foregoing table of comparisons it will be seen that the various samples tested show marked contrasts as to acidity, freedom from earthy salts, and particularly as to keeping qualities. Thus, No. 1 of the series, which, from the high repute of its manufacturer, would be expected to lead the list, is full of impurities, decidedly acid, and rapidly deteriorates on standing. No. 2, the best-known American brand, is less tainted with earthy impurities, but is so sharply acid as to seriously interfere with its therapeutic value, and its keeping qualities are in an inverse ratio to its acidity. No. 3, although sold as "medicinal," was unquestionably a very poor sample of even the commercial article. It shows a minimum of strength, and at the same time a maximum of acidity and earthy impurities. No. 4, of which several specimens were tested, is practically free from impurities, but lacks uniformity, some samples being quiet in the bottles, while others eject the cork with considerable force and a loud report. This would indicate that not every sample is possessed of the keeping qualities shown by those in the table. No. 5 is a fairly good specimen for immediate use, but has extremely poor keeping qualities. Nos. 6 and 7 need no comment. No. 8 falls considerably below its proprietor's claims as to strength, is tainted with earthy salts, and keeps poorly. It is charitable to assume, in spite of the proprietor's assurance that it was "medicinal," that it really was only commercial in grade.

On the other hand, No. 9, which, so far as I am aware, is the newest candidate for professional favor, is an almost ideally perfect product, and at the same time shows fifteen per cent. greater volumetric strength than is claimed for it. This would indicate that the processes of manufacture are being decidedly improved, and that there is really no further need of wasting either time, money, or patience, or of jeopardizing success in practice by using an inferior preparation.

Table of Comparative Values of Various Samples of H_2O_2, as found in this Market.

No.	VALUE PER POUND.			Manufacturer's imprint.	Strength claimed, vol.
	Fresh sample.	After 3 weeks.	After 6 months.		
1	$0 41	$0.17	$0.02	Merck, Darmstadt, Prussia.	10
a	unfit	for med.	use.		
2	0 67	0.34	0.07	Charles Marchand, New York.	15
a	0.36	0.19	0.04		
3	0.07	0.02	0.00	McKesson & Robbins, New York.	10
a	unfit	for med.	use.		
	0.75	0.74	0.57	Oakland Chemical Company, New York.	15
a	0.68	0.67	0.50		
5	0.65	0.40	0.08	John Bené, Brooklyn, N. Y.	15
a	0.50	0 30	0.00		
6	0.42	0 40	0 10	Powers & Weightman, New York.	10
a	0.25	0.20	0.00		
7	0.35	0.34	0.15	Mallinckrodt Chemical Company, St. Louis.	15
a	0.25	0.24	0.10		
8	0.17	0.15	0.05	Peuchot, New York.	10
a	unfit	for med.	use.		
9	0.57	0.57	0.57	Larkin & Scheffer, St. Louis.	10
a	0.75	0.75	0 74		

Note.—The first set of figures represents the comparative commercial values, based on volumetric strength only and assuming five cents a volume as a standard of value, for purposes of comparison. The second set of figures (*a*) represents an estimated intrinsic or realizable therapeutic value, based on the qualities of comparative purity and stability.

It need not be reiterated that the real economic and therapeutic value of this agent can not be determined by the mere volumetric strength indicated on testing a fresh sample. Nor is it assumed that the above estimates are other than approximate. They are, however, based on practical tests and a somewhat extensive personal experience, and the same diligence has been used in each case to procure only perfectly fair samples of the "medicinal" article for test purposes. In each case the chemical manipulation has been repeated not less than three times before accepting results, and in nearly all the cases a portion of each sample was placed in the hands of a competent chemist for verification, the results corroborating my own provings in every instance.

[Since the foregoing tables were prepared several new candidates for professional favor have come to notice.

Under the general name of "pyrozone," McKesson & Robbins, of this city, have placed on the market three different solutions of hydrogen dioxide, as follows:

"Caustic pyrozone," an ethereal solution for which the proprietors allege a strength of 25 per cent., or nearly 120 volumes; "antiseptic pyrozone," also an ethereal solution, said to contain 5 per cent., or nearly 24 volumes; and "medicinal pyrozone," an aqueous solution which is labeled 3 per cent., or 15 volumes.

By test, the several brands respond as follows:

"Caustic pyrozone," 16 per cent., or over 76 volumes; "antiseptic pyrozone," 3·9 per cent., or nearly 19 volumes; "medicinal pyrozone," 2·1 per cent., equal to 10 volumes. In the latter the test for earthy salts shows notable traces of both sulphate and chloride of calcium.

The first two preparations would seem to be valuable acquisitions, while the last is a disappointment.

The well-known firm of manufacturing pharmacists, Messrs. E. R. Squibb & Son, of Brooklyn, are offering to the profession, in compact form, a combination of the necessary chemicals for preparing as wanted a "definite and reliable" 10-volume solution of hydrogen dioxide, with explicit directions, so that "any physician, pharmacist, or intelligent nurse" can manage the manipulation. Each package is said to be sufficient for six pints of the finished product.

I have not yet had opportunity to test the merits of this novel departure in pharmaceutics, and therefore venture no opinion as to their value or reliability. The circular announcement assumes that no hydrogen dioxide can be made stable, which we certainly now have reason to think is a mistake.]

Thus far there has been too much careless and indiscriminate prescribing and fulsome laudation of this product, regardless of its strength or purity. The profession is beginning to discriminate, and must hold the manufacturing pharmacists to the motto: In medicine only the best is good enough.

In the face of this truism, and in the light of modern science, pharmaceutical preparations of inferior quality are dear at any price; and their employment by an intelligent physician, under any circumstances, can be excused only on the plea of actual necessity, which, in these days of electricity, rapid transit, and general progress, is rarely allowable.

Washington Heights, West 181st Street.

THE TREATMENT OF SYPHILIS.*

By ROBERT HOLMES GREENE, A. M., M. D.

It is not my desire to inflict upon you this evening an exhaustive paper upon the treatment of syphilis, nor, unfortunately, have I the results of any original work to announce to you; but it has occurred to me that it might be of interest if I should give my opinion in regard to some questions as to the treatment of this disease, based upon what I have seen of its treatment during the last five years at the Out-patient Department of the New York Hospital and Vanderbilt Clinic, at both of which institutions I have had an opportunity of observing a large number of cases, and in the treatment of some of which I have seen illustrated both the wisdom on the one hand and, I might almost say, the ignorance on the other, of many theories and methods of treatment advocated by writers on the subject. If I plead for the adoption of views held and recently published by Dr. R. W. Taylor in a most able and exhaustive article,† it is not only because I have seen the successful results obtained by following his suggestions, but also of the cases which have come to my knowledge where, if the treatment advocated by certain writers had been carried out, the effects would have necessarily been unfavorable, or where, if such treatment had in fact been followed, the result would have been disastrous.

I shall pass hastily over the subject of the possibility of the abortion of syphilis, either by cauterization or the excision of the initial lesion, and would refer any particularly interested in the subject to a paper published by Dr. Taylor in the *Medical Record*, July 4, 1891, which seems to me to prove beyond dispute by clinical experience, supported by the microscopical investigations of Van Gieson, the uselessness of any such treatment as a prophylactic measure; and to firmly establish as a fact the views held by those who considered the appearance of the chancre itself as indicative of extensive constitutional infection, rather than of a process which had extended only a short distance along the neighboring blood-vessels and lymph-spaces, proceeding in a slow and methodical manner. By the same reasoning the paper referred to has demonstrated the folly of attempting to abort it by hypodermic injections of mercury frequently repeated into the surrounding tissues and neighboring lymphatic ganglia on the first appearance of the initial lesion, as has been theoretically suggested in a brilliant article by Bronson.‡ Starting, then, with the idea that syphilis can not be aborted by any means at present at our command, it might be well, before going farther, for me to lay before you, in a condensed manner, the general plan of treatment recommended by Dr. Taylor, and which I have seen carried out for the last five years; and later on I will give in brief the history of some cases that I have had from time to time under observation, and which may illustrate more forcibly the points I am most anxious to emphasize.

It is, of course, unnecessary to state, however, that it is impossible to lay down a rule for every case, and that much depends upon the good judgment of the physician. I would emphasize this point: that in treating this disease we are engaged in a fight with an enemy, the round infective cells of syphilis, which must be destroyed as early as possible before they have had an opportunity to cause structural changes in the tissues they invade, and we remember that any that escape destruction act as foci from which others are generated. The time we begin our general treatment, with certain exceptions, is on the appearance of the erythema. Treatment is commenced earlier where the site, pain caused by extent of initial lesion, extreme lymphatic enlargement, interference with the married or sexual relation, impatience of patient, precocious general pains or dangerous location to others, as the finger of surgeons, are such as to demand it. We use in the beginning as large doses of the least irritating mercurial preparation taken internally as the patient can stand, remembering also that the sounder the tissues the less irritating will be its effect. We endeavor to have the gastro-intestinal tube, throat, and mouth in as perfect a condition as possible by proper treatment directed toward that end, either before or in connection with the special treatment. In considering this as the correct time to begin treatment, Dr. Taylor differs with the opinion of such writers as Hutchinson and others, but it is in accord with Hebra, Kaposi, Caspari, and many others of the Germans holding that a too early specific treatment will retard, but in many cases will not prevent, secondary eruptions, and that when they do occur they are apt to be very rebellious to treatment. I have myself seen several such cases.

In the majority of cases we have found the protiodide the least irritating preparation to use, and it can be well combined in a pill with citrate of iron and quinine and extract of hyoscyamus. The size of the doses to commence with depends upon the present condition and natural strength of the patient. We begin with less in a naturally weak woman than in a robust man; as a rule, a pill containing from one fifth to half a grain can be safely taken three times daily. Sometimes the tannate works well in doses of half a grain three times a day, but, as a rule, it is more irritating.

I have seen one case of early syphilis in which, the protiodide not agreeing, the biniodide was given with good results in a mixture with about six grains of iodide of potassium daily, not enough potassium to make the so-called "mixed treatment," but the little used seemed to make the biniodide more easily absorbable.

We continue this treatment for about two months with careful attention to diet and hygienic surroundings. By this time the erythema will probably have disappeared, and the glandular enlargements (which are a pretty good guide to the success of treatment) have somewhat diminished. We may now omit treatment for a few days, but we still have the skin infiltrated, and any irritation may bring back a relapsing eruption.

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* Read before the Northwestern Medical and Surgical Society of New York, April 20, 1892.

† Syphilis, Hare's *System of Therapeutics*, vol. ii.

‡ On the Preventive Treatment of Primary Syphilis. *New York Medical Journal*, March 24, 1888.

To support this view I would call attention to a paper published in 1885 by Neumann,* and quoted by Dr. Taylor, in which he states the results found on microscopical examination of the skin in seven cases of syphilis, in which macroscopically the eruption had disappeared from view for periods of from four to eight months. To quote his words: "There is a considerable infiltration of round cells in the cutis and its annexa in the vessels, sebaceous and sweat glands, and hair follicles, with or without pigment. The tissues of the cutis are therefore much clouded with nuclei, and thus we see that the exudates produced by syphilis have in no way that short character which some maintain they have." We remember that each of them is a focus of infection. We have smothered the flames but not put them out, and it seems a most sensible view, supported by clinical experience and the microscopical examinations mentioned above, to attack them in the most direct manner—namely, through the skin. We now use inunctions of some preparation of mercury—the ung. hydrarg., U. S. P., and the oleate seem the best—and, remembering that the glandular enlargements and the skin infiltrations are scattered pretty well over the entire body, we try to cover the whole of it.

With hospital patients we can not do as well as in private practice, but, if we have control of the patient (it will be to advantage to have the services of a professional rubber), we use on an average about thirty-five grains at a time and divide the body for convenience into eleven sections: 1, neck and head; 2 and 3, arms, palms, and axillæ; 4 and 5, legs and soles; 6 and 7, thighs, groins, and Scarpa's triangle; 8 and 9, breast and abdomen; 10 and 11, back from the root of neck to the lower part of the gluteal region. We have the ointment thoroughly rubbed into one of these parts each night, the part having been thoroughly washed beforehand with soap and warm water, followed by a two-per-cent. carbolic solution. After it has been rubbed in it is not well to wash the skin the same night, but it may be wiped with a towel.

By this method, allowing for two or three days, when it may be inconvenient to carry the treatment out, in about fifteen days we shall have thoroughly covered the body, and in all probability without having given rise to any irritation. We then give the patient a few days' rest, followed by another course of inunctions, and then a slightly longer rest before recommencing. After four such courses we shall be between the fourth and fifth month from the appearance of the erythema, and will frequently be surprised to find how well we have succeeded. We then give a rest of one or two weeks, a shorter course of inunctions, and, if doing well, a longer rest, or return to the pills for a time. We do not feel safe unless the patient has had at least forty inunctions. We let the glandular enlargements be, to an extent, our guide in regard to the continuance of the inunctions.

In the second year, if our patient's condition is satisfactory, we give him at intervals the biniodide combined with iodide of potassium, and a bitter tonic; about one eighth of a grain of biniodide is well borne by the average patient, but when we use any mercurial preparation we endeavor to give full doses.

Should we find evidences of relapsing secondary eruptions or glandular enlargements, we return to inunctions. I think in the vast majority of cases where some such method has been carried out from the outset, at the end of two years we can pronounce a patient cured, and expect such patients, so far as syphilis is concerned, to be able to procreate healthy children.

The method I have attempted to sketch in a condensed form refers, of course, only to those cases we have had from the beginning of the erythema. Should the patient have a papular eruption when he first comes under observation, we start with the inunctions at once, and we follow a similar course should there be a pustular or rupial eruption. Such eruptions are more often seen in hospital patients, whose dissipated habits have tended to weaken them and lack of cleanliness given opportunity for the invasion of pyogenic microbes. Inunctions may be used here, but, as we have a twofold process to combat, we try first to get rid of the crust and use a weaker ointment—hydrarg. precip. alb., one part to eight parts of vaseline, to which may be added two per cent. of carbolic acid, oxide of zinc, and starch to assist it in keeping the parts constantly covered.

Hypodermic injections of mercury have been of late much written about, and a great number of different preparations recommended for that purpose. We find the bichloride as efficient as any, used in the strength of one eighth to one third grain at a time daily or every other day with strict antiseptic precautions.

The hypodermic method is more particularly adapted to enlarged lesions, especially when situated on some prominent part and which it may be necessary to remove with greatest haste, and it is also useful in the deeper lesions of syphilis.

In cases where we are in doubt as to the advisability of giving mercury in any form or by any method, we find it to advantage to try one or two hypodermic injections and watch the result. Fumigations and mercurial baths we use in some particular cases, more generally where the eruption is very diffuse and inclined to be pustular; but, as a rule, they are held in reserve, being not often needed. This does not refer to the hygienic use of hot and cold water properly applied. Such baths may be of as great use in controlling this disease as they are in many others, and for the knowledge of the application of which we are greatly indebted in this country to the investigations of my friend, Dr. Simon Baruch.

We use iodide of potassium more particularly for the later lesions of syphilis, especially of the nervous system, either by itself or combined with biniodide, but we find it well in addition in many of these cases to try to destroy, either by mercurial inunction or hypodermic injection of the bichloride, any of the infiltrating round cells that may be present. We also use it in those rather rare cases of syphilis which tend to invade the deeper tissues of the body at an early date, and occasionally in combination with the inunction where we meet with relapsing secondary eruptions which are rebellious to treatment and have lasted for some time.

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* Welches sind die anatomischen Veränderungen der luetischen Haut nach Ablauf der klinischen Erscheinungen. *Wien. med. Wochenschrift*, xxxv, 1885, p. 828 *et seq.*

Referring now to some of my own cases, I will mention that of C. P., aged fifty-eight years, whom I first saw at the Out-patient Department of the New York Hospital, April 11, 1887, who gave a history of having contracted syphilis four years before; that four months before he had become hemiplegic; his family physician being in Europe and his means exhausted, he was obliged to come to us for treatment. A few days later he sent for me to visit his wife, aged fifty-three years, whom he had infected in the early days of his disease, and when I arrived I found her also hemiplegic. It appears that upon first recognizing that he had any disease he had placed himself and wife under the care of their family physician, a gentleman of many years' practice and of good standing in his profession, and that both of them had faithfully and thoroughly carried out all his directions. Upon inquiry I found that the method of treatment adopted by their physician had been to give them mercurial preparations by mouth as long as any secondary manifestations were present on the skin or mucous membranes, and, when they disappeared, to stop and await a relapse before continuing treatment. It was certainly a sad sight to see these two old people at the time of life when they should have enjoyed somewhat the results of their previous labors reduced to poverty and rendered incapable of any work sufficient for their support, and for the original cause of it the woman was certainly not to blame. Under large doses of iodide of potassium and mercurial inunctions to the back of the neck, she so far recovered as to be moved to another portion of the city, and I lost sight of both of them.

To be sure, the age of these people had probably rendered them somewhat harder to treat and increased the dangers of tertiary lesions. I assure you one needs to see but a few such cases to make him disgusted with such a plan of treatment. That is, however, practically the plan at present recommended by Diday and the younger Zeissl and followed by their disciples.

I should like now, as illustrating a plan of treatment somewhat opposed to the preceding, to call your attention to the case of Maggie B., aged twenty years, single, who came to the Out-patient Department of the New York Hospital in the spring of 1890 with a commencing erythematous eruption. She was given a pill of the protiodide, one fifth of a grain three times daily, with citrate of iron and quinine and extract of hyoscyamus, the utmost attention being paid to the care of her mucous membrane and skin. The erythema soon disappeared, but without there being at any time any signs of salivation or gastro-intestinal irritation as evidence of a too powerful dose. Maggie, from a plump, rosy-cheeked girl of one hundred and thirty-five pounds, became pale, lost her appetite and fifteen pounds of flesh, and a relapsing erythema made its appearance, the pills having been taken constantly for seven months.

The pills were stopped, a tonic of iron and quinine was given, and she immediately commenced to improve. After about two weeks mercurial inunctions were added to her treatment; the erythema disappeared; in about eight weeks she had regained her flesh, and at last accounts, some months later, had continued to do well.

Maggie's case illustrates what will frequently follow if we put too much reliance upon the usefulness of mercury given internally and continuously. She was, in my opinion, suffering from the devitalizing influences of both syphilis and the mercury taken internally. On stopping the ingestion of mercury through the alimentary canal and adding a tonic, she immediately commenced to improve, being relieved of one depressing influence, and the inunctions speedily relieved her from the other.

I have myself seen many cases where the continued administration of mercury internally without causing salivation has apparently given rise to an extremely anæmic state. I can not believe that mercury has any effect in increasing the number of red blood-corpuscles or hæmoglobin beyond its influence on the syphilitic infiltrations. Sometimes indeed by its antiseptic action it may do good in certain forms of malnutrition not necessarily dependent upon syphilis; and frequently, if long continued, it ceases to do good and, unless stopped, acts as an additional poison.

The following is the case of Miss B., milliner, aged twenty-four years, of fine physique and good habits (not inoculated through coition), who came to the Out-patient Department, New York Hospital, with a chancre of the labium in the summer of 1889. She had mucous patches scattered extensively over the tongue, the back of the throat, and the inside of the cheeks. All the tissues of mouth, throat, and larynx were in extremely hyperæmic condition. Her pulse was weak, her appetite was poor, she had a troublesome cough, and she was much depressed in mind. She was put on the same pill as Maggie, whose history has just been given. Instead of improving, she became gradually worse, and developed a troublesome laryngitis.

The pills were stopped; the result of local applications made to the throat and mouth were extremely satisfactory, together with the general effect of a tonic of iron and quinine. After the mucous membrane had taken on a healthy aspect the pills were resumed with the most gratifying results.

I mention this case to illustrate the necessity of having the tissues in as healthy a condition as possible, if the good effects of the mercury used are to be made promptly evident. I might be asked why not have given her the inunctions at first? In the condition that she was in I am inclined to think that mercury in any form would have acted as a depressant; but this was one of those cases where it would have been well to try one or two tentative hypodermic injections and watched their effects.

There is a point of interest in the case of a patient, a man of twenty-five years of age, who came to the Vanderbilt Clinic last spring with an erythematous syphilide which had appeared but a few days before. The pains in his back, head, and legs were excessive. I put him on the protiodide pills, one eighth of a grain, three times a day.

The eruption soon disappeared, but the pains were not at all relieved. Acting on a suggestion of Dr. Taylor, I gave him in addition ten grains of iodide of potassium four times daily, and within three or four days the pains had disappeared. This was possibly one of those cases which, if it had been treated by mercury alone, would have involved either the nervous system or some of the deeper tissues of the body—that is, might have gone on to the formation of a precocious gumma.

As still further illustrating the error of commencing treatment too early and persevering in internal treatment too constantly, I will call attention to the case of William M. S., who came to the Vanderbilt Clinic on April 14, 1892. He had contracted syphilis a year before, had consulted his physician on the appearance of the chancre, and commenced to take medicine internally before the appearance of any eruption. He had taken antisyphilitic preparations continually ever since, with the exception of two months last fall, when he took Hood's sarsaparilla. About two months ago an eruption appeared; at the same time his throat became sore and his hair commenced to fall out, and, the eruption not having disappeared under the most strenuous internal medication, he came to us. His general appearance was good. He had an erythematous throat and an erythematous eruption over the body combined with small miliary papules. He would probably be benefited by inunctions. In addition, in cases where the eruption has lasted for as long a time as in this case, Dr. Taylor recommends iodide of potassium internally.

A strong argument to my mind against pinning our faith too firmly to internal medication and to commencing the treatment on the appearance of the chancre and before the erythema, is the sad view taken of the disease by the prominent advocates of either of those methods of treatment. Fournier, the chief apostle of internal treatment, considers it to be a disease which will require treatment at intervals during a lifetime, and I was much interested in hearing a prominent disciple of Hutchinson (who believes in commencing the treatment on the appearance of the chancre) remark recently that he held the same views. I do not at present believe such a sad view need be taken if some such method of treatment as I have tried to outline above, following the suggestions of Dr. Taylor, is carried out.

105 West Seventy-first Street.

The New York Orthopædic Dispensary and Hospital.—The new dispensary and hospital buildings, at No. 126 and No. 128 East Fifty-ninth Street, were inspected by an invited party on Tuesday evening of this week.

The Death of Dr. Francis Upton Johnston, of New Brighton, Staten Island, took place on Sunday, the 20th inst. The deceased was a graduate of the College of Physicians and Surgeons, of the class of 1852.

Dr. Sayre's Work on Orthopædic Surgery is about to be translated into Japanese by Dr. J. K. Kimura, of Tokyo.

Ventro-fixation of the Uterus.—" Dr. Spaeth, of Hamburg, has now published reports of twenty-five cases in which he has performed the operation known as 'ventro-fixation of the uterus.' None of the cases proved fatal. In seventeen permanent anteflexion was obtained; in fourteen there was, besides the retroflexion, a diseased condition of the uterine appendages necessitating their removal. Of the cases that were not so complicated all except one were successful. Dr. Spaeth rarely fastens the stump of the broad ligament into the abdominal wound, usually stitching the fundus uteri directly to the parietal peritonæum. In the later cases he adopted Schede's method—that is to say, silver sutures were drawn through the whole thickness of the abdominal walls at intervals of about an inch and a half, but they were not at first tied. In the intervals finer silver sutures were inserted through the sheaths of the recti, the peritonæum and the fundus uteri, and tightened, twisted, and cut short, the whole of course being beneath the skin; the thicker sutures were then tightened and twisted and the lips of the wound brought together with superficial catgut sutures. The subcutaneous silver sutures remained, but never gave any trouble. Dr. Schede and Dr. Spaeth are both of opinion that this method is the best for preventing any hernia, and that when it has been employed abdominal binders are unnecessary. Dr. Spaeth does not perform or recommend ventro-fixation in cases of retroflexion unless there is either disease of the appendages or chronic peritonitis."—*Lancet*.

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ADENOID GROWTHS OF THE PHARYNX IN CHILDREN.

At a meeting of the Section in Pædiatrics of the New York Academy of Medicine held on November 10th, Dr. Francke H. Bosworth discussed the symptoms and treatment of these growths. Attention, he said, had first been called to this important subject thirteen years before by Wilhelm Meyer. Although he had been the first to write upon it, he had left practically nothing to be said, and the profession had adopted his views of its importance. A common error was made in considering it simply a local disorder of the throat. It was, in fact, a general disease with marked local manifestations. Over sixty per cent. of all nasal catarrh in children was due to these growths. Hypertrophic rhinitis rarely occurred in early life, and deviations of the sæptum were far less common than in adults. The symptoms of most importance were interference with the respiration and impairment of hearing by occlusion of the Eustachian tube. The child assumed a characteristic look which the experienced eye quickly recognized. The mouth was partially open, the nose became broadened, and the voice lost its resonance and had been described as a "dead" voice. A very simple and effective test might be made by means of the vaseline spray. When it was introduced into a healthy nostril a cloud immediately issued from the other nostril; if the pharynx was occluded by adenoid growths, the spray did not return. This simple, harmless, and reliable test was far safer than the use of the nasal douche. The rhinoscope could rarely be used with children under six years of age.

This condition showed a certain constitutional tendency difficult to describe definitely. It was but one step removed from scrofula and was marked by a tendency to hyperplasia of adenoid tissues. If the tonsils were decidedly enlarged, adenoid growths were quite sure to be present. Either condition showed the constitutional tendency; hence one's whole duty was not fulfilled by an operation; the constitutional tendency should also receive attention. One preparation was especially indicated—syrup of iodide of iron. The dose usually prescribed was too small. A child from three to five years old might safely and with advantage take from half a teaspoonful to a teaspoonful three times a day. This treatment should be continued for at least three months after the operation, to remove the constitutional tendency. It was possible in young children, when the growths were recent and soft, to cause them to disappear entirely by the iodide-of-iron treatment. It was doubtful whether children ever outgrew them. A large tonsil never disappeared and adenoid growths probably did not. They remained as diseased tissue, but might shrink somewhat and become hard and fibrous.

When an operation was performed, it should be thorough. The curette was a far better instrument than the forceps, but the snare, in the speaker's hands, had proved most satisfactory. It thoroughly removed the growths without harm to other tissues and without hæmorrhage.

Dr. Beverley Robinson also looked upon the disease as constitutional. Before the introduction of Gottstein's curette the operation had been unsatisfactory. In many children the finger nail was effective in removing the growths and relieving the symptoms. When the growths were small and the case was not a severe one a thorough operation was not demanded. Dr. Frederick A. Castle mentioned chloride of calcium as having proved, in his experience, of considerable value where there was a tendency to overgrowth of adenoid tissue.

Dr. W. P. Northrup, who spoke from the standpoint of the general practitioner, said he frequently removed these growths with the nail. A spool was placed between the teeth and held with one hand, and the arm of that hand held the head of the child against the operator's side, while the index finger of the other hand readily removed the spongy growth in the vault. The results had been so satisfactory that it surprised him that the method was not more generally approved of by laryngologists. The pain was slight, and apprehension of an operation was avoided. Protruding tonsils, when not actually inflamed, should be removed as completely as possible. The vault of the pharynx should be investigated in every case of deafness or chronic otorrhœa. A surprising improvement often followed a simple operation in these deaf, stupid mouth-breathers. Not only was the hearing improved, but mental brightness was often restored. The condition was one that the general practitioner could discover and in many cases remove with most satisfactory results.

A UNIQUE MATHEMATICAL MEMORY.

Jacques Inaudi, called by some "the modern Colburn," is the son of Piedmontese peasants, and he did not learn to read and write until about five years ago, when he was twenty years old. He learned the numbers from his brother by repeating them after him, and after that devised for himself methods of calculation that are peculiar to himself—that is to say, they differ from those in ordinary use. In problems of addition and subtraction he begins with the left-hand numbers. This is stated to be the method of the Hindoo arithmeticians as well. The boyhood of this young man was passed in tending sheep, and while he was thus engaged his mind developed a passion for numbers—figures they can not properly be called in this instance, for the processes are auditional, not visual, with Inaudi. Colburn and all prodigies in numerical memory who have been enabled to give any explanation of their mental work have stated that visualization was the basis of memory. Inaudi is rather disturbed than helped by the use of visible representations of the factors of proposed calculations. If this is true, and there is no reason to doubt it, Inaudi stands as the unique mnemonic prodigy of modern times, by reason of the fact that his powers are based upon the auditory faculty. Although his memory for numbers is prodigious, his memory for words is quite poor. Neither prose nor poetry is well remembered by him, and melody not so well as by most persons. Color, form, time, and place do not fit in with his capacity, and it is simply incomprehensible to him, he says, that chess can be played blindfold.

According to Binet, in his recent paper in the *Revue des deux mondes*, the complexity of Inaudi's mental calculation and his rapidity are alike remarkable. Nearly all the proposed problems have many figures to add, multiply, or divide and to compare, and yet the time taken to announce the answer is extremely short. In a few seconds he adds numbers requiring ten numerals for their notation, and subtracts those requiring twenty; he rapidly finds the square or cube root of large numbers; if fractional parts of multiples are in question, the interval between question and answer is longer; he finds in a few seconds the sixth and seventh roots of true powers. He appears to do the mental part of ordinary examples in multiplication and division in less time than is required to enunciate their answers. He has been known to carry in memory a number expressed by twenty-two numerals for a week, although he had not been warned that he would be requested to repeat it. He can repeat a number forward or backward or give any section of it, as, for example, in millions or billions. At the end of a *séance* he can recite all the figures that have been mentioned up to the number of four hundred.

The head of Inaudi is large and his features are regular and surmounted by a forehead full and high as it is broad. At the Salpêtrière a close anthropometric examination was made, under Professor Charcot, that revealed some few unimportant signs of degeneration. Inaudi converses agreeably and is skillful at cards and billiards. His character is marked by modesty and amiability, and his intelligence is that of an untrained but receptive person. It is quite a mistake to set him down as a mere calculating machine. All inquiry as to hereditary influences has resulted in a negative response. He comes from a family of peasants and was among peasants all his earlier years.

MINOR PARAGRAPHS.

RICKETS AND THE FIRST DENTITION.

It is a common belief that rickets has a marked effect in retarding dentition and changing the character of the teeth. These changes have usually been supposed to present three conditions: either the teeth appear late or in the wrong order or rapidly become carious and are shed in a wrong order. Carpenter and Pedley had come to doubt the correctness of some of these views. In the *Lancet* for May 7th they report extensive observations made upon five hundred rhachitic children. They found dentition undoubtedly delayed, but in most cases the teeth were perfect in character and appearance. The enamel was generally perfect, and there was not a decided tendency to decay or to the shedding of the teeth at an unusually early period. In cases in which the teeth were found defective in character and with a strong tendency to decay a history of inherited syphilis was usually obtained. This last statement, at least, will be received by the American physician with a grain of allowance. But few men experienced in the diseases of children would strongly suspect such a condition from the primary teeth alone. Modifications of dentition depend largely upon the age at which the active stage of rickets begins. Children are sometimes seen presenting decided evidence of rickets in whom dentition has been almost normal.

THE TOXICITY OF SULPHONAL.

Now that sulphonal is being so widely recommended and used in insanity, an article by C. Fuerst in the *Nederlandsch Tijdschrift voor Geneeskunde Dij* for July 2d will be looked upon with interest. He collects from literature and from his own experience sixteen cases of death from the administration of this drug, in some of which cases the dose was but two grains. Obstinate constipation and lessened renal secretion preceded the symptoms of poisoning. The following phenomena have been noted in cases of poisoning by sulphonal: 1. Muscular twitching and tremor. 2. Nausea and vomiting. 3. Vertigo and a tendency to fainting. 4. Rigors with a cold, dry skin. 5. In particular, paretic conditions and ataxic phenomena, especially in the lower extremities; difficulty in moving the tongue. 6. Constipation and oliguria. 7. Exanthemata; brown, patchy discoloration of the skin; small itching papules. 8. Diplopia, scotomata, tinnitus aurium. Respiration becomes weak and labored, but the heart's action seems to be unaffected. Muscular twitchings and paresis of the lower extremities may persist for two weeks subsequently to the discontinuance of the use of the drug. But recovery speedily ensues if the intestinal canal is cleared by purges and enemata. So long as the bowels are properly regulated and the renal secretion is kept normal in quantity, the drug will probably be harmless.

THE CHICAGO CLINICAL REVIEW.

This is the title of a new monthly journal, edited by Dr. George Henry Cleveland and Dr. Albert I. Bouffleur, the publication of which was begun in October. The current number, for November, contains original articles by Dr. N. S. Davis, Dr. Charles Warrington Earle, Dr. F. C. Schaefer, Dr. John H. Hollister, Dr. Nicholas Senn, Dr. Franklin Coleman, Dr. A. A. Knapp, Dr. T. A. Davis, and Dr. J. B. Murphy. The *Review* makes a handsome appearance, and will doubtless prove a valuable addition to current medical literature.

PHYSICIANS AND PARADE LINES.

The Board of Aldermen recently passed a resolution that allows the president of the board of police commissioners to grant permits to practicing physicians giving them the right to cross the line of a parade or procession while on their way to attend patients. Any one that had to go a long distance out of his way to avoid the parade lines during the recent celebrations will appreciate the desirability of this excellent resolution that was introduced by Alderman Rollin M. Morgan.

THE BUREAU OF HYGIENE AND SANITATION OF THE WORLD'S COLUMBIAN EXPOSITION.

We have received from Dr. F. W. Brewer, the superintendent of the Bureau of Hygiene and Sanitation of the World's Columbian Exposition, an announcement of the preparation of a collective exhibit illustrative of the present condition of sanitary science. A comprehensive classification has been adopted, including exercise, alimentation, dwellings, public baths, water supply, removal of refuse, clothing, the hygiene of the workshop, and municipal and State sanitation. Dr. Brewer asks the co-operation of State and local boards of health, also of societies and associations that are engaged in sanitary work of any kind. We hope that an endeavor will be made by these organizations to make their exhibits the most complete presentation of such work that has ever been made.

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending November 22, 1892:

DISEASES.	Week ending Nov. 15.		Week ending Nov. 22.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	0	0	0	0
Typhoid fever	27	7	31	12
Scarlet fever.	86	5	76	13
Cerebro-spinal meningitis	0	2	2	3
Measles	41	3	43	7
Diphtheria	90	27	98	39
Small-pox	5	0	5	1

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from November 13 to November 19, 1892:*

De Witt, Calvin, Major and Surgeon, is granted leave of absence for one month, with permission to apply to the proper authority for an extension of one month.

Fisher, W. W. R., Captain and Assistant Surgeon. The leave of absence granted for seven days is hereby extended fourteen days.

Stiles, Henry R., First Lieutenant and Assistant Surgeon (recently appointed), is assigned to duty at Jefferson Barracks, Missouri.

Straub, Paul F., First Lieutenant and Assistant Surgeon (recently appointed), is assigned to duty at Fort Riley, Kansas.

Winter, Francis A., First Lieutenant and Assistant Surgeon, is relieved from duty at Fort Riley, Kansas, and is assigned to duty at Fort Wingate, New Mexico.

Bradley, A. E., First Lieutenant and Assistant Surgeon, is relieved from duty as attending surgeon, Headquarters Department of the Platte, Omaha, Neb., and is assigned to duty at Fort Sully, South Dakota.

Munday, Benjamin, Captain and Assistant Surgeon, is relieved from duty at Fort Sully, South Dakota, and is assigned to duty at Fort Niobrara, Nebraska, for duty.

Hallock, Harry M., First Lieutenant and Assistant Surgeon (recently appointed), is assigned to duty at Fort McPherson, Georgia, for duty at that post.

Woodson, Robert S., First Lieutenant and Assistant Surgeon, is relieved from duty at Fort McPherson, Georgia, and is assigned to duty at Fort Barrancas, Florida.

Newgarden, George J., First Lieutenant and Assistant Surgeon (recently appointed), is assigned to duty at Fort Sheridan, Illinois.

Kieffer, Charles F., First Lieutenant and Assistant Surgeon, is relieved from duty at Fort Sheridan, Illinois, and assigned to duty at Fort Meade, South Dakota.

Naval Intelligence.—*Official List of Changes in the Medical Corps of the United States Navy for the week ending November 19, 1892:*

Smith, George T., Assistant Surgeon. Detached from Coast Survey Steamer Hassler and ordered to the Vermont.

Lowndes, C. H. T., Passed Assistant Surgeon. Detached from the U. S. Receiving-ship Vermont and ordered to the Hassler.

Arnold, W. F., Passed Assistant Surgeon. To hold himself in readiness for orders to the U. S. Steamer Monterey.

Harris, H. N. T., Passed Assistant Surgeon. To hold himself in readiness for orders to the U. S. Steamer Bancroft.

WINSLOW, G. F., Surgeon. To hold himself in readiness for orders to the U. S. Steamer Monterey.

Society Meetings for the Coming Week:

MONDAY, *November 28th:* Medical Society of the County of New York; Boston Society for Medical Improvement; Lawrence, Mass., Medical Club (private); Cambridge, Mass., Society for Medical Improvement; Baltimore Medical Association.

TUESDAY, *November 29th:* New York Academy of Medicine (Section in Laryngology and Rhinology); New York Dermatological Society; Buffalo Obstetrical Society; Boston Society of Medical Sciences (private).

WEDNESDAY, *November 30th:* New York Surgical Society; New York Pathological Society; American Microscopical Society of the City of New York; Metropolitan Medical Society (private); Medical Society of the County of Albany; Auburn, N. Y., City Medical Association; Berkshire, Mass., District Medical Society (Pittsfield); Philadelphia County Medical Society.

THURSDAY, *December 1st:* New York Academy of Medicine; Brooklyn Surgical Society; Society of Physicians of the Village of Canandaigua; Boston Medico-psychological Association; Obstetrical Society of Philadelphia; United States Naval Medical Society (Washington).

FRIDAY, *December 2d:* Practitioners' Society of New York (private); Baltimore Clinical Society.

Answers to Correspondents:

No. 390.—Information regarding the course of the cholera during the current year may be obtained from the Abstracts of Sanitary Reports published by the Marine-Hospital Service and from the *British Medical Journal* for the past six months.

Proceedings of Societies.

NEW YORK STATE MEDICAL ASSOCIATION.

Ninth Annual Meeting, held in New York on Tuesday, Wednesday, and Thursday, November 15, 16, and 17, 1892.

The President, Dr. JUDSON B. ANDREWS, of Buffalo, in the Chair.

THE PRESIDENT'S address was on the subject of The Alienist and the General Practitioner. He said that the general practitioner, often through ignorance, allowed insane patients to remain at home until the period had passed in which special treatment at insane hospitals could be carried out with any hope of bringing about a cure. Certificates of insanity were not infrequently filled out in such vague terms as to destroy the value of such certificates. They should state explicitly the changes which had been observed to have taken place in the individual, particularly as regarded his thought, feeling, and action. The value of prophylactic treatment was often overlooked, yet it was in this special province that the general practitioner could accomplish so much by keeping the nutrition up to a proper standard, by supplying plenty of fresh air and exercise, and by withholding stimulating and nitrogenous food during the development of the sexual apparatus. Training the child to be orderly and systematic in all things was also a very important element in attaining mental health. The physician should use all his influence to prevent ill-assorted marriages, which were often brought about through the efforts of friends with the belief that they thereby improved the chances of some unfortunate. Our insane hospitals were in a much better condition than formerly, and the profession at large was showing its appreciation of this by greater willingness to send patients to such institutions. All the important steps in the way of such improvements had been initiated in New York State The speaker closed with an earnest appeal for compulsory instruction on the subject of insanity in our medical schools.

Pneumotomy for the Relief of Tubercular Abscess and Gangrene of the Lung; Twice on the same Patient.—Dr. J. BLAKE WHITE, of New York County, read a paper with this title Up to twenty years ago, he said, there had been nothing in surgical literature about the operative treatment of the lungs, and the credit of establishing a method of surgical treatment for defined diseases of the lungs belonged to Estländer. Although an ordinary abscess of the lung might terminate in recovery, no case of gangrene of the lung had been known to do so without surgical interference. After describing a number of recorded operative cases, some successful and others not, the writer narrated the history of his own case. The patient was a girl, aged thirteen years, and when first seen by him, in January, 1890, she was suffering from an acute broncho-pleuro-pneumonia, ingrafted upon an old unresolved pneumonia, which had degenerated into a fibrosis involving the right lower lobe and part of the middle lobe. He saw her next on June 26, 1890, in consultation with Dr. Pease, of Norwood. At this time a large area of the right lung had become gangrenous, and there was an abscess communicating with a bronchus. On the following day, under anæsthesia, an incision was made in the sixth intercostal space, about an inch anterior to the axillary space, and, the finger detecting fluctuation, an opening was made and about two ounces of fœtid pus were evacuated. She was immediately relieved, and under irrigation, drainage, and antiseptic treatment of the cavity she steadily improved until about three months after the operation, when it was found that the removal of the tube, a month previously, had resulted in reaccumulation of pus and a return of the constitutional symptoms. A second consultation, on September 22d, showed a favorable condition around the site of operation, but a region of decided dullness in the posterior part of the lower lobe, extending along the scapula. An incision was made into the thorax, an inch posterior to the axillary line, and a similar condition found to that which had existed at the time of the first operation. Fœtid pus and portions of gangrenous lung were removed, and a drainage-tube was inserted. The cavity was frequently irrigated with a solution of peroxide of hydrogen, and often during these irrigations the patient would cough up some of the fluid. The drainage was continued for eight months. It was now two years since this operation, and her health was even better than it had been in her childhood, and menstruation, which had been arrested, had returned. The author said much care should be exercised in irrigating pulmonary cavities, but he considered irrigation less dangerous in gangrenous cavities than in those discharging laudable pus. Cases of gangrene of the lung were never too far advanced for surgical interference, even though showing profound sepsis. Pulmonary adhesions were not essential, and delaying for their formation might prove disastrous. In his opinion, the corrugated white rubber tubing was much better for draining pulmonary cavities than the ordinary rubber tubing, as it was not so easily compressed and was not unduly irritating.

Dr. J. G. TRUAX, of New York County, said that within the last five years he had successfully operated in two cases of abscess of the lung. In one, that of a child of eight years, aspiration was sufficient to effect a cure, and in the other, that of a male adult, a portion of a rib was excised and a drainage-tube inserted into the abscess cavity and kept there for about two years.

Dr. E. D. FERGUSON, of Rensselaer County, said that the drainage of a pulmonary cavity demanded considerable judgment in selecting a tube of firmness and resiliency, and he was inclined to think that a tube as firm as the one recommended would, if retained long, be likely to set up ulceration. In his own practice he had satisfactorily overcome this difficulty by using a double tube, the outer one being quite firm and the inner one much more yielding.

Traumatic Osteo-arthritic Lesions which involve the Proximal Segment of the Ankle Joint.—Dr. Thomas H. Manley, of New York County, read a paper thus entitled. Although the ankle joint was more exposed to injury than any other in the body, and subjected to more frequent strains, it was seldom ankylosed. It was generally classified as a hinge joint, but there were really limited abduction, adduction, and rotation. In severe ankle-joint concussions, protracted immobilization should be especially avoided. Some objected to frequent changes of dressings, but it seemed to him that the slight motion attending these changes tended to stimulate the reparative process.

Dr. E. M. Moore, of Monroe County, said that he had found, as stated in the paper, that the internal malleolus was apt to be the first to give way. A ligament was stronger than a bone, and in experiments which he had made on the cadaver he had found that the bone would be pulled apart before the ligament would yield. Where there was fracture of both the fibula and the internal malleolus, if the latter was not pressed out by twisting the astragalus a little too far, as Dupuytren's splint was apt to do, the result would be perfect. Where there was fracture of bones held together by an interosseous ligament there was always a tendency on the part of the fractured ends to bend in toward the opposite bone. His rule was to bring out the lower fragment, and allow it always to overlap the upper one a little. His own practice had been not only to carry out Dupuytren's idea, but also to relax the tendo Achillis by the use of an inclined plane, the foot being fastened to the foot-board and turned a little upon itself. Traction was also made on the foot, and a pad was placed on the inner side. He had never seen ankylosis in his cases of Pott's fracture. He did not agree with the author at all in regard to the treatment of Colles's fracture, but would speak of this more in detail in his own paper.

Dr. Manley said, in regard to Colles's fracture, that the experience of many excellent surgeons was that the results of treatment were often unsatisfactory.

Some Recent Cases of Appendicitis.—Dr. Nathan Jacobson, of Onondaga County, read a paper in which he referred to the great changes which had taken place in the past twenty years in the treatment of this condition. In from eighty to ninety-five per cent. of all cases of appendicitis the inflammation was of the catarrhal type, and in these medicinal treatment only was appropriate. His paper, however, was limited to a consideration of those cases which required surgical treatment. The first two cases described in the paper were of the suppurating form, and did not involve the peritoneal cavity. The third case was a very rapid ulcerative appendicitis, which gave rise almost from the outset to septic peritonitis. The absence of premonitory symptoms made it still more unusual. After the operation the patient passed a quiet night, but on the following morning the temperature suddenly rose to 105° F., the pulse became rapid and feeble, and he passed into a muttering delirium and died that evening. The fourth case was similar to the preceding as regarded the involvement of the peritoneal cavity, but differed from it in the occurrence of pain and tenderness for two days previous to the development of the acute symptoms. On incising the peritonæum, a stream of thin pus appeared. The gangrenous appendix was ligated and cut off, and the stump was cauterized. The patient did very well until the fifth day, when there was a sudden rise of temperature, accompanied by pain, and an examination under anæsthesia showed a small quantity of pus beneath the superficial adhesions. On liberating this and displacing the head of the colon, a stream of liquid fæces escaped. This came from a perforation in the cæcum, close to the attachment of the appendix. It was sewed up with the Lembert suture, and the patient did well for five days more, when he died of septic peritonitis. In the fifth case the condition of the appendix indicated that a delay of twenty-four hours in performing the operation would in all probability have cost the patient his life. In the sixth case, a man, forty years of age, had experienced two or three attacks of pain in the right iliac region during a few months, with more or less constant tenderness; so on September 20, 1891, laparotomy was performed, and the appendix found adherent on all sides to the outer and posterior portion of the cæcum. It was an inch and three quarters long and was densely infiltrated at its base. It was cut off, the base was cauterized, and the man made an excellent recovery. In the fourteen months that had now elapsed since the operation his general health had been much better than formerly, and there had been no return of the pain. The author drew the following conclusions as to the treatment of appendicitis:

1. As the appendix, and not the cæcum, is the primary seat of disease, these forms of inflammation should be known as appendicitis. The terms typhlitis, perityphlitis, and paratyphlitis are not only confusing but incorrect. 2. It is most important to determine whether the inflammation is non-suppurative or suppurative. If suppurative, it is equally vital for proper treatment to establish whether the diseased appendix and the purulent collections are to be hemmed in by protective adhesions or to remain in direct communication with the general peritoneal cavity. 3. With symptoms of moderate severity, and no tendency of the inflammation to increase in extent or intensity, but rather to decrease after thirty-six hours, it is safe to treat the case medicinally. 4. The administration of salines or other cathartics in the early stage of an appendicitis is not only inadvisable but apt to interfere with the development of protective adhesions, and it may even cause perforation. Exploration with the needle to determine the presence of pus is useless, and may be dangerous. 5. The violence of the symptoms and their continuance and progression indicate the presence of existing suppuration and render operative interference justifiable. The earliest manifestations of a developing general peritonitis make an immediate operation absolutely imperative. 6. Each case is to be considered in the light of the individual symptoms it presents. The absence of fever is not to lull the medical attendant into a feeling of security. The proper moment for operative intervention in a given case can not be established by the period of time elapsing in its development. A timely operation is one performed before the appearance of septic peritonitis or other serious complications. 7. Where the inflammatory process is of moderate severity and evidence of tumor formation is present, the operation may be delayed until the fifth, or even as late as the twelfth day. The incision then to be made is to begin parallel with Poupart's ligament, an inch above its center, and to curve upward along the outer border of the iliac fossa, thus being made entirely extraperitoneal. 8. Acute cases, manifesting signs of perforation or gangrene, with no evidence of protective adhesions, demand an immediate operation, the incision being carried along the outer border of the rectus muscle and directly into the free peritoneal cavity. 9. In advanced cases of suppuration, in which the abscess is post-cæcal, it can be opened by a rectal incision. 10. Patients in whom attacks of appendicitis persist in recurring, especially when localized tenderness continues, should submit to the removal of the appendix during an intermission.

Dr. Frank W. Ross, of Chemung County, referred to a case in which there had been eight mild attacks before there were indications of suppuration, and then a laparotomy was performed, an extraperitoneal abscess was evacuated, and the patient recovered. Physicians said ninety per cent. would recover without operation, but they allowed the other ten per cent. to die.

Dr. Moore, of Monroe County, said that in deciding the difficult question as to the necessity for operation he was largely governed by the presence of dullness on percussion, although he was free to admit that accumulations of gas in the bowel were very prone to lead one astray. He had also seen several cases of appendicitis in which an abscess had opened in the loin, so that in all cases he carefully examined the back, as well as the front, for tenderness.

Dr. Jacobson said that when the operation was not performed until the later stages, abscesses might be found pointing at various points. He had looked upon these abscesses pointing in the loins as retroperitoneal abscesses, rather than as due to appendicitis. If the pain was not localized, the condition of the pulse was a better indication for treatment than the temperature.

(*To be concluded.*)

AMERICAN GYNÆCOLOGICAL SOCIETY.

Seventeenth Annual Meeting, held in Brooklyn on Tuesday, Wednesday, and Thursday, September 20, 21, and 22, 1892.

The President, Dr. John Byrne, of Brooklyn, in the Chair.

(*Concluded from page 474.*)

Accouchement Force in Certain Obstetrical Complications, with Remarks on the Treatment of Post-partum Hæmorrhage.—Dr. Egbert H. Grandin, of New York, read a paper with this title. Under the advance of aseptic surgery great strides had been made in all operative procedures in midwifery, he said, and then went on to describe methods adopted by himself in cases calling for operative interference. In detailing a case of placenta prævia with hæmorrhage, he said that where the cervix was slightly dilated the finger was introduced and complete dilatation effected in thirty minutes. Version was then performed, the child extracted, and the placenta removed. Gauze was then introduced up to the fundus of the uterus, thus sparing the patient all further loss of blood. Recovery was prompt. Among other cases in which a similar procedure was carried out were cases of uræmia and also slight pelvic contraction with previous labors, in which the fœtus had not been born alive. The results that had attended this treatment were in contrast with those that not infrequently followed the temporizing and slower methods commonly practiced. The day had come when the life of the child should no longer be needlessly sacrificed in the apparent interests of the mother; two lives could be saved by modern methods, where at least one would have been sacrificed by the older and slower procedures. The author pointed out the advantage of dilatation with the sensitive hand. The objections that had been made to accouchement forcé were theoretical rather than practical. It had been suggested that it was likely to be followed by uterine atony and serious hæmorrhage. This objection would not apply in cases of placenta prævia, where the object was to check existing hæmorrhage. In uræmia bleeding was useful, whether from the arm or the uterus. The author had never seen any evil result from the introduction of gauze, and he would always advise it where the uterus failed to respond to hot injections after delivery.

In regard to danger to the cervix, he had not observed any, but, granting that it might exist, it was equally great with other methods, and taking the risk was justifiable in the attempt to save the child.

The President's Address.—The President opened his address by expressing appreciation of the honor conferred upon him and of the duties which that honor implied. His distinguished predecessor in office, Dr. Jackson, had alluded to some of the abuses that had crept into the practice of gynæcology. One, the alarming frequency with which dangerous mutilating operations had been performed upon the sexual organs of women, was a blot which he thought was being rapidly effaced. Another equally deplorable cause of complaint was the subjecting of young unmarried women to speculum examination without due cause. The president trusted he would not appear to be abusing the privilege due to the society's courtesy in calling attention to a matter that concerned a numerous class and was of deep personal interest to himself. He referred to the treatment of cancer of the uterus and to the disposition on the part of the more radical members of the profession to disregard all means of relief save one, and that a dangerous, mutilating, and, as he would try to show, comparatively fruitless procedure at best. The advocates of vaginal hysterectomy for cancer would, no doubt, indignantly resent a charge so grave as that of misstating or misrepresenting facts, suppressing evidence which might conflict with preconceived notions, or attempting to belittle or ignore rational measures for the alleviation of human suffering or the prolongation of life. Nevertheless, while advocating and practicing extreme surgical measures, to the defects of which they seemed invincibly blind, they persisted in displaying an unworthy and unbecoming spirit of intolerance and lofty contempt for their more conservative brethren. In no direction had this unfair and illiberal spirit been so strikingly manifested as in the manner in which this radical element, both here and abroad, had disregarded a means of treating uterine cancer which, while it might be considered absolutely free from danger, had secured for the sufferer a period of exemption from relapse far beyond and in striking contrast with that effected by hysterectomy. In their struggle for pleas to justify hysterectomy they had set up the operation of high amputation as practiced by Schröder and others as the main target for their criticism; yet, while the speaker had little regard for this particular method, its results had been much more favorable than those of hysterectomy. Some tables were analyzed to show the misleading manner in which statistics could be handled and how freely they were made use of to justify the operation of hysterectomy. As against this operative procedure, those who had a right to speak alleged for the treatment of cancer of the uterus by the electro-cautery the following most important advantages: 1. Absolute freedom from danger, immediate or remote. 2. Longer respite from recurrence than had yet been shown by the most favorable and ingeniously constructed statistics of hysterectomy. For example, in nearly four hundred cases there had not been a single death due to the operation; in forty out of sixty-three cases of cancer of the portio vaginalis, twenty-three patients having remained away, there had been periods of exemption ranging from two to twenty-two years, an average of over nine years.

Amputation of the cervix for cancer, whether high or low, was regarded by the speaker as worse than useless without cauterization, and, as it was not free from danger, he thought it could be said that there were only two surgical measures to choose between to-day, namely: 1. High amputation or excision by the galvano-cautery, not only of the diseased parts, but much more, removing as much tissue from beyond the supposed danger line as could be safely taken away, the same to be followed by a thorough dry roasting of all exposed surfaces. 2. Vaginal hysterectomy, with its more attractive surgical glamour and ghastly records of lives shortened and often sacrificed on the altar of what was nowadays miscalled "progressive gynæcology."

Vaginal Hysterectomy for Cancer of the Uterus.—Dr. Hermann J. Boldt, of New York, read a paper on this subject. He said that the technique was fully as important as the question of the indication for the operation. This was apparent when the rate of mortality at the present time was compared with that of ten years ago. As for methods of operating, the author did not confine himself to any one plan, but depended chiefly upon asepsis as one of the most important factors in the ultimate good result. One of the reasons why total extirpation should be employed in preference to high amputation with the knife or actual cautery was that a number of cases had been reported in which, although malignant disease of the cervix or vagina alone had been apparent before the operation, yet after removal of the uterus its body was found the seat of malignant changes, but with a band of perfectly healthy tissue separating the corporeal cancerous tissue from that below. One could not, then, be sure, on removing only a part of the uterus, of having extirpated the entire malignant growth, however limited it might seem to be. The total number of the speaker's cases of vaginal hysterectomy was forty-four, with but three deaths. These three patients had had independent carcinomatous nodules in the body of the uterus. The operations had been done for cancer of the cervix. On cutting into the uterus after its removal, the corporeal disease was discovered. In regard to some points in the operation as practiced by the speaker, ligatures were preferred to clamps in cases where a choice was possible, as the leaving of a perfectly closed wound was the ideal operation. Clamps, then, were only used where they were absolutely necessary or were advantageous in expediting matters. Catgut was to be preferred to other materials for sutures. Experience had taught the lesson that the operation in certain advanced cases was to be condemned, where it had formerly been recommended. In such cases the patients' lives were likely to be cut shorter or rendered even more miserable. In regard to recurrence, it was the author's opinion that malignant disease affecting the corpus uteri or the upper part of the cervical canal admitted of a more favorable prognosis than cancer of the vaginal portion of the cervix. In considering the points in diagnosis, in limiting the operation from a clinical standpoint, the author wished to place himself on record as discarding the terms upper and lower line of limitation for total extirpation for cancer. For him there was only one line, no matter how early the disease or how limited it might appear; if he were given a choice of operation, it would be complete removal of the organ. Statistics showed that from the thirty-sixth to the sixtieth years carcinoma of the uterus was most prevalent. An examination of the reports of various life-insurance companies showed an average mortality of 5·5 per cent. from cancer of the uterus in women. The number of patients surviving the operation for removal, without recurrence after two years, had been sufficiently large to place vaginal hysterectomy for cancer on the list of necessary operations for the prolongation of life. Recent reports had been regarded by the author as rather favorable for total extirpation, and he had not been convinced by the president's address that this treatment should be abandoned for the electro-cautery.

Supravaginal Hysterectomy, with Subperitoneal Treatment of the Stump without Ligature, in Operations for Uterine Fibro-myomata.—Dr. B. F. Baer, of Philadelphia, read a paper on this subject. His object was to call attention to a new manner of managing the cervix in supravaginal amputation. After the usual abdominal incision was made, all adhesions were separated, and the tumor was lifted out. The patient being preferably in Trendelenburg's posture, the first step was to pass a single silk ligature through the broad ligament near the cervix, again transfixing with it the ligament near its outer edge to prevent slipping when it was tied. The uterus was separated close to the tissues of the tumor, and, if necessary, another ligature was then passed through the broad ligament farther down, alongside the cervix. The ligation and cutting were then repeated on the other side. The knife was then run lightly around the tumor an inch or two above the peritoneal reflection over the bladder in front, probably a little lower behind, and the peritonæum was stripped down with the handle of the scalpel to make flaps. The uterine arteries were then ligated outside of but close to the cervix. Care was taken to avoid the ureter on the one hand and the cervical tissue on the other. The tumor was amputated at the cervix, and the cervix grasped with a small volsella. It was then trimmed, the entire supravaginal portion being removed before it was dropped back into the pelvis. The cervix now being released, it was drawn deeply into the vagina, where it was buried by the peritoneal flaps covering it. These flaps were rendered so taut by the ligatures that, usually at least, as the cervix receded into the pelvis they closed over it like elastic bands. The cervix was then in its natural place without a single ligature in it or band around it. There was nothing whatever done to the cervical canal. The author had operated in this manner in nine cases within about a year. All the patients had made excellent recoveries without suppuration.

Supravaginal Hysterectomy for Uterine Fibroids; Report of Fourteen Cases.—Dr. William M. Polk, of New York presented the histories of fourteen cases of uterine fibroids in which supravaginal hysterectomy had been done. He said that operators had ranged themselves into schools, according as they favored intraperitoneal or extraperitoneal methods of treating the stump. The mere fact that two methods held the field was presumptive evidence that neither was perfect. As an operation, total extirpation of the uterus for fibroid disease presented no special conditions except in the matter of controlling the vessels. Those that were most likely to give trouble were those belonging to the vagina and to the posterior wall of the bladder. Their peculiar anastomotic arrangement with the vessels above made the process of securing immunity from bleeding a difficult one, each individual case requiring special consideration in this respect. These vessels were, however, all given off between the uterus and the point at which the main trunk crossed the ureter, so that a ligature placed outside the ureter would control all of them. Of course, it was understood that such a procedure would not be necessary in every case. In regard to the management of the stump, some authors simply dropped it to its natural position in the pelvis, passing a drainage tube through it; others had advocated inclosing it by stitching the peritoneal surfaces together, and still others turned in the peritonæum and drained the vagina from below with gauze. So far as the author was concerned, he could not say that any one method had proved to be better than another. The one which he selected for a given case was the one which left the most natural surface behind and most amply provided for drainage.

Can we prevent Secondary Hæmorrhage after Ovariotomy?—Dr. H. T. Hanks, of New York, thought that a consideration of this question was justified by the fact that, despite the good surgery that was done, dangerous and even fatal secondary hæmorrhage did occasionally occur. This accident had happened twice in his practice. One patient had died, and the other had been saved by reopening the abdomen, securing the arteries, and resorting to saline infusion. Besides this experience with his own cases, he had reopened the abdomen in another case for a friend, secured the vessels, infused a saline solution, and thereby saved the patient. He knew of ten deaths from this cause within the last five years. As to its prevention, two or three points were worthy of consideration. In the first place, all forms of pedicle should not be treated in the same manner. For instance, in the case of a broad, flat pedicle the artery was to be found and ligated, then the pedicle quilted in and out in such a manner that under no circumstances could the silk slip. If the pedicle was small, one should try to find the artery before transfixing, then pass the needle to one side of it and tie thoroughly. Where the pedicle was small, great care must be taken not to make too much traction, for fear of splitting the artery or pedicle. In the removal of diseased tubes and ovaries, if they were imbedded in old exudations, there would be only small arteries to deal with and almost any well-tied ligature would hold.

The Value of the Forceps in Complicated High Arrest of the Breech, with Reports of Two Cases.—Dr. Edward Reynolds, of Boston, read a paper with this title. He detailed the histories of two cases of the rather rare condition of arrest of the breech at the superior strait, complicated by dangerous constriction of the uterus. The point that he made which was of special interest was that, had the hand been introduced to bring down a leg, rupture would surely have taken place in the thin constricting band of the uterus.

The Best Management of Occipito-posterior Cases.—Dr. Chauncey D. Palmer, of Cincinnati, read a paper with this title. While he had nothing new to offer, he thought that some more rational plan of procedure should be adopted in the occipito-posterior presentations of the vertex. The occipito-posterior position should not be considered to exist as such unless the occiput was in such relation to the pelvic planes as to tend naturally to rotate posteriorly instead of anteriorly. In the large majority of cases in which the occiput looked considerably backward, rotation would naturally take place anteriorly during the progress of the case. As to the management with the occiput in the posterior position in the first stage of labor, the bag of waters should be preserved until late, the patient lying on the side toward which the occiput was directed. If the occiput was resting far back, the whole hand was to be introduced into the vagina and the fœtal head lifted and rotated, with the aid of external manipulation, into a position that would become occipito-anterior. The knee-elbow posture might have to be assumed to assist the manipulation. If this should fail or the faulty position should repeat itself, podalic version might be speedily accomplished. When the second stage of labor was reached, anterior rotation often occurred without interference. If the head had reached the pelvic floor, the thing to do was to increase flexion, which could be done by pressure upward on the frontal bone. Failures sometimes occurred, and the forceps then maintained its reputation as a conservative instrument for the mother by preventing exhaustion, and for the child by diminishing cerebral pressure. Rotation, however, should still be left to Nature while traction was made with the straight or only slightly curved forceps. During the progress of the labor the forceps, if curved, would have to be taken off and reapplied. The author had never indorsed the doctrine that craniotomy was never justifiable on the living child, for in some neglected cases of occipito posterior position this procedure might have to be done in the interest of the mother. In making a diagnosis of posterior vertex presentation, palpation of the abdomen and auscultation were important. It was not always possible to estimate the degree of backward inclination of the occiput, or to say whether it would undergo anterior or posterior rotation.

Stomatitis due to Irritation of Epithelial Pearls in the Mouth of New-born Children.—Dr. Henry J. Garrigues, of New York, read a paper on this subject, which had been brought to his notice by the appearance of a small epidemic of superficial ulceration of the palate in the new-born children in the Maternity Hospital. A careful examination of all the babies—fifty-two in number—showed forty-nine of them to have congenital epithelial pearls on the palate. The first twenty-seven of the children had had their mouths washed out immediately after birth and after each nursing with the velvety side of a piece of lint soaked in a saturated solution of boric acid. Of this number, twelve had had a more or less sore mouth, the ulceration always beginning at the site of the epithelial pearls. In the last twenty-five cases no washing had been done, and not a single case of sore mouth had developed. The epithelial pearls were small, white globular tumors of the size of a pinhead, ranging from that to the size of a millet seed. They were situated in the rhaphe of the palate, generally at the junction of the hard and the soft palate. They usually existed in clusters of from one to five. The outer surface was hard, the interior soft. They were imbedded in the mucous membrane and were covered with a layer of condensed connective tissue. Instead of the rounded prominence there was sometimes a white line half an inch long in the rhaphe. The mass was composed of epithelial cells like those of the mucous membrane of the mouth. The outer layers were the youngest, having a polyedral form and a nucleus; those nearer the center were flat and had lost their nucleus. Similar formations were sometimes found on the free edge of the alveolar process. Epithelial pearls were not retention cysts formed by occlusion of glands, but were due to inclusion of parts of the epithelium of the mouth. They were found as early as in the eighth week of fœtal life, and disappeared in healthy children at the end of the second month after birth. In badly nourished children they persisted much longer. They were found in that particular situation in the palate because it was formed of two lateral projections which gradually united in the median line from before backward. On the alveolar process their existence was probably due to the growing together of the walls of the dental furrow over the germs of the teeth. In making a diagnosis of this condition, Bednar's aphthæ must not be confounded with it. In this latter disease the superficial ulcers were similar, but they began laterally, on the plane corresponding to the hamular process of the sphenoid bone, and were usually bilateral. Sprue formed white spots and was never congenital, and also it attacked any part of the mouth irregularly. In the treatment of this condition it should be remembered that the formation of epithelial pearls was a physiological process and should not be interfered with. If the mouth was washed out at all it should be done with plain water and a soft, smooth rag, taking great care not to wound the epithelium. If stomatitis was caused by rubbing off the pearls, the best treatment of the ulcer was to swab it with water acidulated with a few drops of acetic acid and then paint it with borax and glycerin (a drachm to the ounce). The ulcers usually healed in a week or two.

Umbilical Hernia in the Female.—Dr. A. Palmer Dudley, of New York, described his method of dealing with these cases, and said that he was not an advocate of the plan of simply returning the parts without incising the peritonæum. He did not wish to risk leaving anything in the abdomen which might be a source of danger, and for this reason it was his custom to open the peritoneal cavity. While he usually relied upon catgut in most operations, in such cases he thought it unsafe to depend upon it to retain the divided abdominal wall in coaptation. In closing the wound, silver-wire sutures were used to take off the strain, and catgut to coaptate the parts more closely. The ends of the silver wire were passed through a small rubber cannula, which at the same time did away with the necessity for twisting them and also served for drainage. In all the cases union had been secured with almost entire absence of suppuration and with no rise of temperature. He felt satisfied that hernia would be less likely to follow laparotomy if operators would be more careful in closing the abdominal incision.

Book Notices.

The Uses of Water in Modern Medicine. By SIMON BARUCH, M. D., Attending Physician to the Manhattan General Hospital, etc. In Two Volumes. Detroit: George S. Davis, 1892.

IT is over forty years since Dr. Gully wrote his popular treatise on the use of water in chronic disease, and the many editions through which that work passed in England and America have left some impress on the professional opinion of to-day. His work dealt with but one feature of the subject, the use of water in acute diseases not being touched upon. This work was an excellent one, fully abreast of the scientific knowledge of the day, though this was not sufficient to explain many of the facts that were then observed and that are now explicable through our wider scientific knowledge. We refer to this still useful work because the author of the present volume has evidently overlooked it in making the statement that the translation of Winternitz's book is the only work in the English language that has not the taint of quackery. And few English-speaking physicians will coincide with von Ziemssen in the opinion that "whatever we know of hydrotherapy we owe to Winternitz." But in this it seems that the author has but followed the prevalent custom of making Germany our scientific Mecca.

The first chapter is devoted to an interesting history of the therapeutic use of water. The author expresses some surprise that the German Government allows the propagation of the sect of physicians who use water as a panacea. But that government may wish to encourage what has been said to be the great characteristic of some of our own countrymen—the liberal use of water externally and no use of it internally.

The action of water externally and internally, and at different temperatures and forces of impact, is considered from a physiological standpoint. In the chapter on the technics and clinical application of hydrotherapy the author insists that precision in the temperature of water is as important as in the dosage of drugs. Yet we do not instruct our patients to drink water of a temperature of 90° to produce emesis, or of 60° to produce an evacuation of the bowels, and a cold wet pack at 40° will probably be but little different in its action from one of 65°. The quinine simile the author uses will serve our purpose, for some excellent physicians treat malarial fevers with doses of a few grains every few hours, others give several large doses a day, and others still give a single large dose; and the quinine does no harm while doing some good in whatever dose it is given.

The description of the technics of lavage, as well as of the indications for its use, is very useful. We agree with the author that intestinal irrigation in infantile diarrhœa and in dysentery is a logical procedure.

The suggestions regarding the employment of irrigation in intestinal obstructions, catarrhal jaundice, and lead colic will prove serviceable to many readers of the work.

While commending the use of water in gynæcology, the author has emphasized the necessity of its proper application, and we believe that he has anticipated a surgical procedure of the future in commending hot water as the best aseptic agent. We would especially commend the very sensible remarks regarding vaginal injections after labor, as it has been stated that in one institution in which this meddlesome midwifery is carried out in all detail there are more cases of puerperal infection occurring during the year than in any other similar institution—more probably on account of than in spite of irrigation.

One of the longest chapters in the book is that on hydrotherapy in fevers, with special reference to typhoid fever. Many statistics have been collected showing the mortality under various methods of treatment, and that advocated by the author, the so-called Brand treatment, has certainly the lowest mortality. While we acknowledge its efficacy, we do not believe that the author considers it the *ultima Thule* of treatment, for the main cause of the disease, a septic process in the intestinal tract, is untreated. Many authors have advocated the treatment of malarial fevers by cold baths, yet no one believes that they could do more than allay the temporary symptoms, leaving the cause of the disease *in statu quo ante.* So the cold bath in typhoid fever is but a sop to the Cerberus of the infectious process, and to accept it as the best method of treatment will, we fear, discourage the search for that agent that will probably be discovered, and be for enteric fever what quinine is for malarial fever.

The value of hydrotherapy in pneumonia, the eruptive fevers, acute rheumatism, gout, anæmia, and chlorosis is demonstrated by numerous statistical references, and its application in each of these diseases is clearly described.

In phthisis the author reports such great improvement following the use of baths that they should be more generally employed.

In diseases of the nervous system we believe hydrotherapy has its most important field of usefulness, on account of the physiological action exercised by the water, and the author's indications for its employment seem to be well considered.

The summary of conclusions shows his enthusiasm for his topic. We can not see that all the reasons he gives demonstrate that water is in any wise capable of more accurate dosage than any other medicinal agent, though we cordially agree that it is "an important and much-neglected auxiliary in the treatment of disease."

This work will be suggestive and useful to all who read it carefully and apply its teachings, and its incorporation of the latest facts on the subject of hydrotherapy will make it the standard work on that subject.

A Clinical Text-book of Medical Diagnosis for Physicians and Students, based on the most Recent Methods of Examination. By OSWALD VIERORDT, M. D., Professor of Medicine at the University of Heidelberg, etc. Authorized Translation from the Second Improved and Enlarged German Edition, with Additions. By FRANCIS H. STUART, A. M., M. D., Member of the Medical Society of the County of Kings, New York, etc. Second Edition, revised. With One Hundred and Seventy-eight Illustrations, many of which are in Color. Philadelphia: W. B. Saunders, 1892. Pp. xv–17 to 700.

THE first two chapters of this volume treat of the method of taking the history of the patient. These are followed by chapters devoted to the general examination of the patient, including the appearance and significance of pathological changes in the color of the skin, as well as the subject of the temperature of the body.

The fourth chapter is devoted to the examination of the respiratory apparatus, including the nose and larynx. The examination of the nose is very briefly disposed of, and there is no reference in the appendix to the method of employing the nasal speculum, as is stated on page 74.

In the chapter on the examination of the circulatory apparatus there is no description of the method of using the sphygmograph, and we believe that those who have used the various instruments will agree that Dudgeon's sphygmograph is more satisfactory than any of those mentioned. A description of Fleischl's hæmatometer would have been appropriate, especially as the Thoma-Zeiss hæmatocytometer is fully described.

The chapter on the examination of the digestive apparatus is very satisfactory, careful directions being given regarding the methods of examining each of the abdominal organs concerned in digestion.

The directions for the examination of the urinary organs are quite satisfactory, though in this country the cold nitric-acid test is considered of greater utility than those referred to in the text. The estimate placed on the value of the albuminometer seems to us to be a fair one.

The most comprehensive chapter in the book is that on the examination of the nervous system, including as it does the nervous disturbances of the various organic functions. The method of electro-diagnosis is well described, and it is illustrated by Erb's diagrams.

There is an appendix containing some directions for laryngoscopic examinations, very brief directions for ophthalmoscopic examinations, and descriptions of the micro-organisms of certain infectious diseases.

We believe that the translator would have produced a more readable work if he had followed the German text less closely, and thus have avoided the redundancy of expression that not infrequently occurs. His note upon the method of keeping records of cases is free from the awkward English elsewhere encountered. There is a very complete index that will materially enhance the value of the work to the student and reader.

On Congenital Obliteration of the Bile ducts. By John Thomson, M. D., Fellow of the Royal College of Physicians of Edinburgh, etc. Edinburgh: Oliver & Boyd, 1892. Pp. 52.

Dr. Thomson reports in this thesis a case of congenital obliteration of the bile-ducts, and he reviews forty-nine cases of that malformation in which the diagnosis was confirmed by post-mortem examination. He concludes that this congenital malformation probably affects a considerable extent of the walls of the ducts, and that the narrowness of their lumen interferes with the outflow of bile and causes catarrh of them, with final blocking and obliteration. This is in the nature of an inflammatory process slowly spreading to the walls of the ducts and gall-bladder, the local condition getting worse during each month that the patient lives. The obliterated ducts or gall-bladder, or portions of them, may entirely disappear, not even leaving a distinct band of fibrous tissue to indicate their original position. The obliteration generally becomes complete at an early period of intra-uterine life.

The text is illustrated by an excellent drawing of the appearances in the author's case. As appendices to the paper there are the report of a case of congenital obliteration of the small intestine, with an excellent illustration, and also an illustrated report of a case of congenital obliteration of the gall-bladder.

Technique d'électrophysiologie. Par le Dr. G. Weiss, Ingénieur des ponts et chaussées, Professeur agrégé à la Faculté de médecine de Paris. Avant-propos de M. le Professeur Gariel. Paris: Gauthier-Villars & fils; G. Masson. Pp. 214.

Within the compass of such a duodecimo volume it is difficult to write a satisfactory treatise on the technics of electrophysiology, and the author has refrained from introducing any personal opinions on the subject, but cites with impartiality and brevity the arguments for and against each theory, so that the reader may be informed regarding them and choose for himself.

Besides a table of the signs and symbols employed to indicate the various electrical units and a recital of the electrical formulæ and laws, there are brief descriptions of the measures of intensity, quantity, difference of potential, and electro-motive force.

The chapter on the production of electricity by the living tissues of fishes, insects, plants, quadrupeds, and human beings is succinct. The subsequent chapters include the action of electricity on the tissues, the continued current, the "lost time of Helmholtz" and unique electrical waves, and periodic currents. The work seems to be quite abreast with the scientific discoveries made in electrophysiology, though the reader must be content to accept the facts without a comprehensive explanation.

The Pathology and Prevention of Influenza. By Julius Althaus, M. D., M. R. C. P. Lond., Senior Physician to the Hospital for Epilepsy and Paralysis, Regent's Park. New York: G. P. Putnam's Sons. London: Longmans & Co., 1892.

This little book is an amplification of the author's paper on the subject that was published in the *Lancet* in the latter part of 1891. He thinks that influenza is caused by a pathogenic micro-organism the identity of which has not yet been discovered. This micro-organism produces a specific toxine that has a special affinity for a definite center of the nervous system that is irritated and depressed by it. As is the case in other infectious diseases, there is formed in the blood an antidote that tends to limit the influence of the toxine, and the author thinks that animal vaccine lymph approaches closely to this hæmic antidote, because in the German army recently revaccinated troops appeared to be less susceptible to influenza than others. If revaccination exercised any influence in preventing the disease it would be a desirable procedure, for epidemic influenza doubled the mortality from certain diseases during its late prevalence.

The Operative Treatment of Enlargement of the Prostate. Based upon the Records of Upward of One Hundred and Forty Cases. Three Lectures delivered at the Royal College of Surgeons. By C. W. Mansell Moullin, M. A., M. D. Oxon., F. R. C. S., etc. London: John Bale & Sons, 1892. Pp. 82.

The author does not believe that operations on the prostate are required for enlargement of that organ, but rather for the complications resulting therefrom. He reviews the embryology, anatomy, and physiology of the prostate, as well as the influence of prostatic hypertrophy upon the action of the bladder. The palliative operations, such as the treatment by injections and electricity, are considered unsatisfactory. The reported results of Mercier's, Gouley's, or Bottine's prostatotomy do not commend those operations. The author thinks that McGill's operation of suprapubic prostatectomy is the procedure *par excellence* for the cure of hypertrophy, though, of course, cystotomy and drainage may be more suitable in some cases. In the table that he has prepared the cases are classified under the different operations.

The Principles and Practice of Bandaging. By Gwilym G. Davis, M. D., Universities of Pennsylvania and Göttingen. Detroit: George S. Davis, 1892. Pp. xi to 61. [Price, $3.]

The author divides the consideration of his subject into three sections, one on the roller bandages, one on the tailed bandages, and one on the handkerchief bandage. He urges the necessity of first learning the fundamental principles of bandaging in order to successfully apply the various special bandages, for which a surgeon has more daily need than he has for the technics of laparotomy. The work is somewhat larger than appears from the announcement, as there are twenty-three plates that are not included in the paging. The illustrations are in outline, drawn by the author. For the price at which this work is sold much better illustrations should be furnished.

It seems an omission in a book on bandaging to have no description of the methods of applying a plaster-of-Paris bandage to the trunk. The lack of an index detracts further from the value of the work.

Hydrotherapy at Saratoga. A Treatise on Natural Mineral Waters. By J. A. Irwin, M. A., Cambridge, England; M. A., M. D., Dublin University, etc. New York: Cassell Publishing Company.

A fairly good likeness of the author serves as a frontispiece to this opusculum of some two hundred and seventy pages on the mineral waters at Saratoga. It is the author's design that the work shall serve "to establish among educated readers a correct and unprejudiced valuation of mineral waters generally and those of Saratoga in particular." With such a plan in view the author has necessarily made a work of a popular character, and he has here and there given evidence of the range of his travels and his reading. His work is not intended to supplant the advice of a physician, rather to supplement it, and he is justified in hoping that those members of the profession who are unacquainted with Saratoga will find the volume serviceable.

The Anatomy of the Peritonæum. By Franklin Dexter, M. D., Assistant Demonstrator of Anatomy, College of Physicians and Surgeons, New York. With Thirty-eight Illustrations. New York: D. Appleton & Co., 1892. Pp. 86. [Price, $1.50.]

We believe that the anatomy of the peritonæum may be justly termed the *pons asinorum* of the student of medicine, and it seems to us that the author has adopted a comprehensible scheme for presenting his subject by beginning with the description of the development of the alimentary canal.

The thirty-eight illustrations in the volume explain the text, that gradually progresses from a description of the single tube in the early development of the embryo to that of the completed development of the abdominal viscera.

It seems to us that this volume will aid all those to whom the text-book descriptions of the peritonæum prove a stumbling block.

Practical Pathology. A Manual for Students and Practitioners. By G. Sims Woodhead, M. D., F. R. C. P. Edin., Fellow of the Royal Society, Edinburgh, etc. With One Hundred and Ninety-five Colored Illustrations. Third Edition. Philadelphia: J. B. Lippincott Company, 1892. Pp. xix–652. [Price, $7.]

The revision of this excellent work has added more than one hundred and sixty pages to the text, as well as some thirty-three new illustrations. The second chapter, entitled "pathological histology," might more appropriately be called "instruments and methods." It has been brought up to date. A new chapter has been added that describes the processes of inflammation, organization, and repair. This is a most useful addition. A number of changes occur in the chapters on the liver, on the kidney, and on the bones and joints.

The great beauty of the illustrations, that so much enhanced the value of the work when it was first published, will still prove an attraction to the student. The book is one of the best practical text-books of pathology that we have.

The Principles of Theoretical Chemistry, with Special Reference to the Constitution of Chemical Compounds. By Ira Remsen, Professor of Chemistry in the Johns Hopkins University. Fourth Edition, thoroughly revised. Philadelphia: Lea Brothers & Co., 1892. Pp. xi–13 to 322.

The author states that in this new edition he has preserved the original character of the book, so that it will still help students to get clear ideas in regard to the fundamentals of chemistry. The fact that it has been translated into German and into Italian since the appearance of the last American edition, some five years ago, gives evidence of the esteem in which the work is held.

The author states that he has incorporated into this revision all the changes called for by the advance of chemical science, and we feel assured that the popularity of the volume will continue.

Du traitement par l'électrolyse des déviations et éperons de la cloison du nez. Par J. Bergonié et E. J. Moure. Paris: O. Doin, 1892. Pp. 3 to 70.

We should judge from this brochure that electrolysis for the relief of nasal obstruction had not attained the popularity in France that it has in this country. The authors believe that electrolysis is the most desirable operative procedure for the destruction of cartilaginous or osseous spurs in the nasal passages, because it is bloodless, it is almost painless, it destroys no more tissue than is desired, and a single *séance* usually suffices to relieve the morbid condition. They employ the bipolar method. We do not think that this will prove as serviceable as the galvano-cautery or the trephine in relieving such deformities.

Asheville, or the Sky-Land. By Mrs. Harriet Adams Sawyer. St. Louis: The Nixon-Jones Printing Co., 1892. Pp. 104. [Price, 75 cents.]

This little book is intended to serve as a guide to Asheville, and the authoress has freely illustrated her text by photogravures. Any person intending to visit that pleasant resort may find a great deal of useful information in the volume.

BOOKS, ETC., RECEIVED.

Acne and Alopecia. By L. Duncan Bulkley, A. M., M. D., Professor of Diseases of the Skin, New York Post-graduate Medical School. Detroit: George S. Davis, 1892. Pp. 85. [The *Physicians' Leisure Library.*]

Manual of Practical Medical and Physiological Chemistry. By Charles E. Pellew, E. M., Demonstrator of Physics and Chemistry in the College of Physicians and Surgeons, New York, etc. With Illustrations. New York: D. Appleton & Co., 1892. Pp. xiv to 314. [Price, $2.50.]

Reform in the Treatment of the Insane. Early History of the Retreat, York: its Objects and Influence, with a Report of the Celebrations of its Centenary. By D. Hack Tuke, M. D., LL. D., formerly Visiting Physician to the Retreat. London: J. & A. Churchill, 1892. Pp. 4–5 to 96.

Diseases of Children. A Manual for Students and Practitioners. By C. Alexander Rhodes, M. D., Instructor in Diseases of Children, New York Post-graduate Medical College. Series edited by Bern B. Gallaudet, M. D., Demonstrator of Anatomy, College of Physicians and Surgeons, New York. Philadelphia: Lea Brothers & Co., 1892. Pp. 6–17 to 159. [The *Students' Quiz Series.*]

Souvenir of Asheville, or the Sky-Land. By Mrs. Harriet Adams Sawyer, St. Louis.

Transactions of the American Surgical Association. Volume the Tenth. Edited by J. Ewing Mears, M. D.

Annual Report of the Board of Health of the Health Department of the City of New York, for the Year ending December 31, 1891.

Some Considerations on the Treatment of Cutaneous Malignant Epitheliomata (Cancers). By A. R. Robinson, M. B., L. R. C. P., etc. [Reprinted from the *International Journal of Surgery.*]

Vaginal Hysterectomy in Cancer of the Uterus. By H. J. Boldt, M. D., New York. [Reprinted from the *American Journal of Obstetrics and Diseases of Women and Children.*]

Ophthalmic Reprints. By Frank Van Fleet, M. D., New York.

The Present Demand for Better Medical Education in the South. By Luther R. Grandy, M. D., Atlanta, Ga. [Reprinted from the *Atlanta Medical and Surgical Journal.*]

An Operation for the Radical Cure of Stricture of the Lacrymal Duct, with Description of a Stricturotome. By Charles Hermon Thomas, M. D. [Reprinted from the *Ophthalmic Review.*]

Nomenclatura morborum auris et nomenclatura morborum nasi et naso-pharyngis. By E. D. Spear, M. D., Boston, Mass.

Report of a Case of Talipes Equino-varus. By B. Merrill Rickets, Ph. B., M. D., of Cincinnati, Ohio. [Reprinted from the *Journal of the American Medical Association.*]

Fracture of the Base of the Skull with the Escape of the Cerebro-spinal Fluid, followed by Facial Paralysis and Recovery. By Joseph Collins, M. D., New York. [Reprinted from the *Journal of Nervous and Mental Disease.*]

A Contribution to the Study of Chronic Myelitis, based on a Record of Twenty Cases. By Joseph Collins, M. D., New York. [Reprinted from the *Post-graduate.*]

Transactions of the American Otological Society, Twenty-fifth Annual Meeting, Fort Griswold House, New London, Conn., July 19, 1892. Vol. V, Part. 2.

Fourth Annual Report of the New Amsterdam Eye and Ear Hospital, with Nose and Throat Department. For the Year ending May 10, 1892.

Contribution à l'étude expérimentale du pental. Par le Dr. J. Van Reysschoot. Travail du laboratoire de thérapeutique de l'Université de Gand. [Extrait des *Annales de la Société de médecine de Gand.*]

Hand-book of Physiology. By W. Morrant Baker, F. R. C. S., late Surgeon to and Lecturer on Physiology at St. Bartholomew's Hospital, and Vincent Dormer Harris, M. D. Lond., Examiner in Physiology at the Conjoint Board of the Royal College of Physicians and Surgeons, etc. Thirteenth Edition. With upward of Five Hundred Illustrations, including some Colored Plates. Philadelphia: P. Blakiston, Son, & Co., 1892. Pp. xi to 884.

Anatomy. A Manual for Students and Practitioners. By Fred. J. Brockway, M. D., Assistant Demonstrator of Anatomy, College of Physicians and Surgeons, New York, and A. O'Malley, M. D., Instructor in Surgery, New York Polyclinic. Series edited by Bern B. Gallaudet, M. D., Demonstrator of Anatomy, College of Physicians and Surgeons, New York. Philadelphia: Lea Brothers & Co., 1892. Pp. 7–17 to 376. [The *Students' Quiz Series.*]

The Medical News Visiting List. 1893. Thirty Patients per Week. Philadelphia: Lea Brothers & Co., 1892.

Pestilential Foreign Invasion, as a Question of States' Rights and the Constitution. The Failure of the Maritime States demands a Common Defense. An Address delivered before the Tri-States Medical Society of Georgia, Alabama, and Tennessee, at Chattanooga, October 26, 1892. By Joseph Holt, M. D., of New Orleans, La.

Habitual Postures of School Children. By Eliza M. Mosher, M. D., of Brooklyn, N. Y. [Reprinted from the *Educational Review.*]

Teacher and Student. An Address delivered on the Occasion of the Opening of the New Building of the College of Medicine and Surgery of the University of Minnesota, Minneapolis, October 4, 1892. By William Osler, M. D., F. R. C. P. Lond., etc.

Report of the Trustees of the Newport Hospital, presented to the Corporation at its Nineteenth Annual Meeting, July 12, 1892.

A Pocket Medical Dictionary, giving the Pronunciation and Definition of about Twelve Thousand of the Principal Words used in Medicine and the Collateral Sciences. By George M. Gould, A. M., M. D., etc. Including very Complete Tables of the Arteries, Muscles, Nerves, Bacteria, Bacilli, Micrococci, Spirilli, and Thermometric Scales, and a Dose List of Drugs and their Preparations, in both the English and Metric Systems of Weights and Measures. Philadelphia: P. Blakiston, Son, & Co., 1892. [Price, $1.]

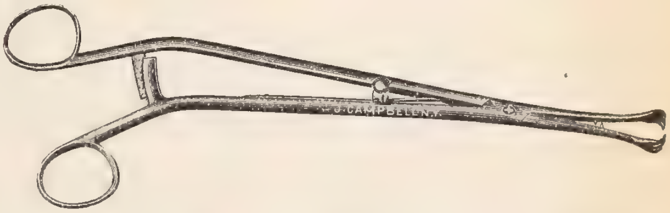
Fissure of the Anus and Fistula in Ano. By Lewis H. Adler, Jr., M. D., Instructor in Diseases of the Rectum in the Philadelphia Polyclinic. Detroit: George S. Davis, 1892. Pp. vi to 78. [The *Physicians' Leisure Library.*]

New Inventions, etc.

A FORCEPS FOR FACILITATING THE OPERATION OF TRACHELORRHAPHY.

By Andrew F. Currier, M. D.

The cut represents an instrument which will be found serviceable in the performance of trachelorrhaphy, especially in cases in which a sufficient number of skilled assistants is wanting. The forceps is nine inches and seven eighths in length; each jaw has three teeth with an eighth-inch grip. When the forceps is closed the spread of the jaws is five sixteenths of an inch; when opened to the last notch of the ratchet it is nine sixteenths of an inch. These jaws are to be secured to the vaginal portion of the cervix at its base just before the wounds are sutured, and additional steadiness of the cervix is secured by means of a single tooth in each jaw an inch from the end.



There is also a slot and screw attached to the lower blade four inches and a half from the end of the jaw in which a sound passing into the uterine canal can be secured, the handle of the sound being removed to obviate interference in passing the sutures. The handles are strong, are supplied with a ratchet and a strong steel spring, and are sufficiently curved downward to avoid interference with the field of vision.

The advantages of the instrument, as it appears to me, are that it enables one to make accurate coaptation of the lips of the wound, furnishes counter-pressure, and prevents tearing of the tissue, which so commonly occurs when a tenaculum is used, especially when one is unfamiliar with the operation. Another decided advantage consists in the fact that hæmorrhage from the wound, which is sometimes very annoying, is almost entirely checked by the pressure which brings the lips in contact with each other. The operator is also enabled to dispense with the services of the assistant who is ordinarily required to steady the cervix with a tenaculum and to keep the field of operation free from blood. The use of the sound will be deemed superfluous by many operators, but I have often found it useful in preserving the normal direction of the canal and insuring its patency. Unless the handle were removable it would be in the way in passing the sutures on that side of the instrument to which the sound is attached. Of course the sound is to be introduced before the forceps is adjusted. I have also found the instrument useful in abdominal operations in which a strong volsella is required for lifting tumors out of the pelvis.

The forceps was made by Mr. J. Campbell, corner of Thirty-fourth Street and Lexington Avenue, to whom I am indebted for the fidelity with which the directions and drawing pertaining to the instrument were followed.

85 Madison Avenue.

A PAIR OF POST-NASAL SCISSORS.

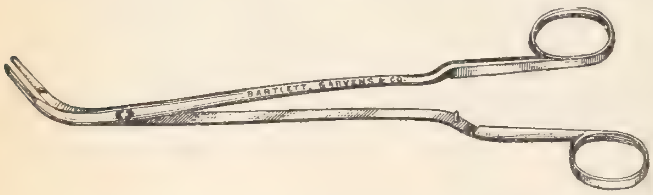
By John Dunn, M. D.,

RICHMOND, VA.

The cut represents a pair of post-nasal scissors made for me by Messrs. Bartlett, Garvens, & Co., of Richmond, Va. These scissors will be found of service in the following cases—cases in which the usual forms of adenoid forceps and curettes are unsuitable:

1. In the separation of adenoid adhesions to the Eustachian tube mouth, which adhesions are often so situated as to be out of the reach of any instrument with which I am acquainted.

2. In the removal of adenoid masses where, owing to their duration or to the constitution of the patient, the proportion of connective to lymph tissue is so great that these hypertrophies are extremely tough and their removal with post-nasal forceps requires an undue amount of force and often brings away a strip of the mucous membrane adjoining the adenoids.



3. In those cases where the adenoid development has been excessive and where the greater part of these hypertrophies has been removed with the curette or forceps these scissors will be found of advantage in trimming off the irregularities on the pharyngeal wall.

4. In certain cases where the usual adenoid forceps might be used, the scissors will often offer advantages which will be seen from the nature of the case.

These post-nasal scissors have a handle similar to that of Löwenburg's forceps, only lighter. They have the French lock. Near the finger rings is a guard to prevent overaction of the blades. The blades of the scissors are three quarters of an inch long, are slightly curved with their concavity forward, and are rounded at the tip. In the above-mentioned conditions, as in all cases where operations are to be done on the upper pharynx of persons over eight or nine years of age, the application of White's palate retractor is necessary, if the operation is to be done to the best advantage.

Miscellany.

Railway Surgery at the Pan-American Medical Congress.—A Section in Railway Surgery of the Pan-American Medical Congress has been organized, with Dr. C. W. P. Brock, of Richmond, Va., as executive president. A full list of officers has been provided for each of the constituent countries. At the eleventh annual meeting of the Wabash Railway Surgical Association, the first organization of the kind, Dr. C. B. Stemen, of Fort Wayne, was by unanimous resolution requested to prepare a paper on Organized Railway Surgery and read the same before the Section in Railway Surgery of the Pan-American Medical Congress. At the same meeting Dr. Hal C. Wyman, of Detroit, offered the following, which was unanimously adopted:

Resolved, That each member of this association solicit his congressman to interest himself in legislation in favor of the Pan-American Medical Congress.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

Original Communications.

EYE-STRAIN
AND ITS RELATIONS TO "CEREBRAL HYPERÆMIA," ETC.*

By E. C. SEGUIN, M. D.

Eye-strain, more especially that due to paresis or original weakness of the third and sixth cerebral nerves, produces many symptoms besides cephalalgia and migraine which have lately received so much intelligent attention. The symptoms to which I refer are fully as important as cephalalgia and migraine, but have been generally, if not universally, misunderstood because practitioners have blindly followed the theoretical teachings of certain authorities.

The chief of these symptoms are: Occipital, suboccipital, and occipito-cervical pain and distress; a sense of stiffness in the occipito cervical region ("at the base of the brain," as is commonly said); feelings of fullness, pressure, or lightness in the head; sensations of numbness or of formication in the scalp; varying degrees and forms of dizziness (but not true vertigo †); inability to read, write, sew, converse, sit at table, to go on the street or into rooms, and even to "think," without supervention or aggravation of symptoms; fear of certain places; insomnia; emotional attacks; pains (differing from migraine) in various parts of the head; and, later, also the multiple symptoms termed neurasthenia. Individual patients describe these subjective symptoms somewhat differently, according to their ability of observation and their facility of expression.

The above-mentioned symptoms, variously grouped and sometimes combined with others, have been appropriated by the advocates of a fanciful vaso-motor pathology; and such wholly theoretical "diseases" as "*cerebral hyperæmia*" (Hammond) and "*congestion of the base of the brain*" (Brown-Séquard) have been accepted by the profession with but too little open criticism, and multitudes of patients have been treated by remedies *deductively* considered as useful, such as the actual cautery, cups, and blisters to the neck, the ice-bag to the head and spine; internally, ergot, the bromides in full doses, belladonna, and (contrary to the theory, but found useful in practice) strychnine. Such cases have never been cured, I believe, by these means alone, though often relief has been obtained by the analgesic effects of the remedies and by the *suggestion* of the confident specialist.

I have never recognized these so-called "diseases," but have always recorded and spoken of the symptoms as paræsthesiæ of the head (*cephalic paræsthesiæ*), awaiting the time when experience might lead to their more correct interpretation.

To be brief, I now believe that I can offer a preliminary partial grouping of these symptoms according to their pathogenesis, not by any means a perfect scheme, but one which may serve as a basis for further and more minute observation and better classification.

1. The majority of cases presenting such symptoms are, I think, cases of eye-strain: exhaustion and hyperæsthesia resulting from the persistent use of weak neuro-muscular organs, more especially the third and sixth nerve apparatuses. Errors of refraction seem to play but a secondary part in the genesis of the symptoms, whereas they are very important in cases of cephalalgia and migraine. Most of all, suboccipital pain and distress (the chief symptoms of "congestion of the base of the brain") are due to defective power of convergence and accommodation. Not rarely, in all categories, the symptoms appear within a short time or suddenly, after years of apparently easy use of the eyes. This sudden onset may often be traced to the action of some debilitating influence, such as an attack of acute disease, to over-use of the eyes, etc.; and it often coincides with the "failure of accommodation," normal or premature. In other words, the strain and fatigue resulting from the use of weak eyes are often long compensated or rendered latent by perfect health.

2. Some cases (my experience does not enable me to state a proportion) of cephalic paræsthesiæ are due to dyscrasic conditions, more especially lithæmia, oxaluria, latent gout—in general terms, to conditions of suboxidation. The early stage of cirrhosis of the kidneys is sometimes characterized by these symptoms and obstinate headache, and in these cases the arterial tension is persistently high, the urine is overabundant, of low gravity, contains hyaline casts with or without albumin; attacks of convulsions and of slight hemiplegia are not rare.

3. Such symptoms as lightness in the head, pressure in any direction (I do not believe that the *direction* of the pressure, a purely subjective interpretation by the patient, has any meaning in the present state of our knowledge), and deficiency in power of attention, memory, etc., may undoubtedly be caused by anæmia of the brain from general anæmia or through valvular cardiac disease, feeble heart, etc.

4. It is also possible that occasionally these symptoms indicate the beginning of organic cerebral disease, but at present we can not feel sure of this in a given case.

5. Probably cephalic paræsthesiæ are developed by the action of peripheral—*i. e.*, extra-cerebral—lesions, as in some cases of "spinal irritation," etc.

The chief purpose of this note is, however, to endeavor to advance the problem, as presented in group 1, one step further, and to state (from observed facts only) which of the above-mentioned symptoms may be caused by paresis of the third nerves and their muscles, and which by paresis of the sixth nerves and their muscles, apart from the element of refraction, which is also important.

The necessity of stating my views in so small a compass must be the excuse for the following condensed summary of two symptom-groups which deserve more ample treatment:

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* A supplement to Lectures on some Points in the Treatment and Management of Neuroses, which appeared in the *Journal* in April and May, 1890. Lecture I. Written at Florence in January, 1890, for a German edition of the Lectures (G. Thieme, Leipsic, 1892).

† Aural or labyrinthine vertigo and vertigo from evident or latent diplopia are, of course, excluded. In such cases true vertigo (subjective whirling or turning) exists, and often no other cerebral symptoms are present.

A. *Symptoms of Paresis (Insufficiency) of the Third Cerebral Nerves and Attached Muscles.*—Occipito-cervical pain and "distress" are the characteristic symptoms, sometimes the only ones. The pain, diurnal as a rule, and often not appearing until the patient has used his eyes in dressing, eating, or reading, is usually greatest between the occipital bone and the second vertebra, though it often extends from the upper part of the occiput to the fourth or even the sixth vertebra. It is sometimes more a "distress" than a true pain, and is often accompanied by sensations of stiffness and tightness ("as if a hand grasped the neck"). There is never, strictly speaking, neuralgia of the occipital nerves, or objective rigidity as in beginning caries. Tenderness is rarely found, though in women spinal hyperæsthesia (so-called spinal irritation) often coincides. Frequently there is a sensation of weight or downward pressure on the back part of the head, with (usually) intermittent numbness (a "dead" or "wooden" feeling) and formication. In some cases the fullness or tightness (cincture or cap feeling) extends to the whole head.

Apparent loss of power of attention and concentration (volition) is much complained of, even to a degree simulating mental failure.* Reading, writing, sewing, piano practice, conversation, even eating, are painful or unbearable; in other words, the symptoms are increased by any act requiring convergence and accommodation. It is sometimes said by patients, in objection to the suggestion of eye-strain, that the symptoms appear or are increased by "simply thinking"; but this statement involves ignorance of the psychological fact (or law) that in thinking, giving attention, concentrating our mind, and in willing—in all such apparently purely psychic acts—we unconsciously send out motor impulses to the ocular apparatus chiefly, but also to many other muscular groups. Any one can, by a few moments' study of himself, verify the truth of this statement that giving attention or willing usually includes external muscular activity (unconscious, as a rule). Thus eye-strain occurs in persons who do not mean to use their defective eyes.

The prolonged duration of these symptoms, or rather of the strain, may lead to neurasthenia, insomnia, and a curious mixture of hysteria and hypochondria, so that the diagnosis becomes more obscure.

Headache is not rare, but in such cases there are also usually faults in refraction or other factors. Simple asthenopia, sense of fatigue, or pain in the eyes, orbits, brow, or temples, is only occasional, and seldom a prominent symptom. Usually the patient pretends to have strong eyes.

B. *Symptoms of Paresis (Insufficiency) of the Sixth Cerebral Nerves and Attached Muscles.*—In contrast with the symptoms of insufficiency of the third nerve apparatus, the symptoms of this condition are diffused, variable, and less definite. Perhaps the most prominent is dizziness, or "vertigo," as stated by the patient. But close questioning shows that this is not a true vertigo, but a sense of unsteadiness, of uncertainty of equilibrium, of confusion, clearly referred to the head. Allied to this is nearly always a sense of indefinite fear. At times the dizziness is so great as to oblige the patient to keep his room and to give up all ordinary duties and relations. Going out upon the street or entering rooms filled with people intensifies the feeling to an insupportable degree, and the patient needs the moral or physical support of another person.

Various and peculiar sensations are felt in the head—such as a sense of fullness, "as if the head would burst"; a downward pressure on the head, diffused or localized, "as if a stone or a sharp stick" pressed on it; a sense of constriction, general or cincture-like; pain in various areas of the scalp; occasional feelings of numbness (a "dead" or "wooden" feeling), or of formication or wormlike crawling, also variously distributed; a quasi tinnitus or noise in the head (not in the ears) is not rare.

As these paræsthesiæ are increased by the sight of moving objects in a small or large space (on the street, where machinery is in motion, or where a number of people are moving), we often meet with conditions like those termed agorophobia and claustrophobia; and I am confident that many cases recorded under these titles have really been cases of eye-strain. However, I admit that there are such cases which depend upon more general pathological conditions. I should add that the movements necessary to make the examination of the eyes of these patients fatigue them very much, even the simplest test of the recti muscles by the index finger causing distress. Hence examinations should be made slowly and in several *séances*.

Apparent loss of mental power is perhaps more marked a feature of these cases than of those of category A. The patient can do things fairly well all alone in the quietude of his room, but in his relations with the world he seems to lose all self-control and power of attention and concentration. In consequence of the distress attending going out upon the street and meeting other persons, such a degree of emotional disturbance (loss of self-control) is developed that the patient is said to be hysterical. His symptoms absorb his attention so much that he often is called hypochondriacal as well.

Insomnia and neurasthenia are results of long-continued eye-strain in this category as in the first—perhaps more. It is in these later stages of the affection that the diagnosis becomes obscure, and can only be determined by prolonged observation and by trial of treatment. For it is not easy to say at once, in a case presenting symptoms of neurasthenia and hysteria (perhaps also "spinal irritation"), together with defective eyes, which of the conditions is primary and pathogenetic. The relation of cause and effect is doubtless in either direction in different cases, and it will be for future observation to give us the elements for judging this important question more quickly and positively.

In the few cases which I have seen in which all the ocular muscles were paretic, the (multiple) symptoms were more like those of category B.

It may be said that there is a certain overlapping of semeiology in this sketch of the two symptom groups. This is true, but I believe that further study will make the distinction more complete, though it must be remembered that these overlappings appear in nearly all symptom groups which we attempt to represent as "diseases." This note is suggestive only, and I do not pretend to state more than the main outlines of the question.

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* Some cases of "breaking down" at school from "overwork" belong to this category.

It is probable that a special grouping of symptoms will be found to be due to "spasm of accommodation," which so often complicates errors of refraction. I have not the data for any suggestion in this direction, except to say that headache and migraine will be found prominent.

Diagnosis by Manipulation.—It is out of my province to speak of the ophthalmic examination necessary in all such cases; but I desire to call attention to the facts that the simple test of convergence, by approximating a small object to the patient's nose, increases the suffering of subjects of the first category, while those of the second category experience great distress when made to look outward or around without moving the head, or if a bright object is moved circularly, or a wheel rotated before them. Complete atropinization gives these last patients great relief.

Diagnosis by Drugs.—In the present state of medicine this is occasionally a final resort. We employ it in supposed malarious and syphilitic cases, even while remembering that quinine does cure some non-malarious conditions, and that mercury and iodide of potassium are occasionally efficacious where syphilis is out of the question. A trial by bromide treatment often enables us to correctly judge cases in which hysterical and epileptic symptoms are conjoined. In cases of eye-strain, experience has taught me that cases of the first category (third-nerve paresis) are relieved by nux vomica or strychnine, and are aggravated by belladonna and other mydriatics; whereas, on the contrary, the last-named remedies give relief to cases of the second category (sixth-nerve paresis), and strychnine makes them worse. In some uncomplicated cases of paresis of the third nerves (insufficiency of the recti interni or of the ciliary muscle) an apparent cure is obtained by a progressive course of strychnine.

I can not in this note refer *in extenso* to the treatment of all such cases, but will simply repeat what is stated in the text of the *Lectures*—viz., that, apart from the adaptation of proper glasses and prisms, in some cases the use of partial or total tenotomy or myotomy, which are all of the utmost importance, the scientific treatment consists in the internal use of nux vomica, strychnine, and nerve tonics generally in cases of category A, and of cannabis indica, belladonna, atropine, conium, the bromides, antipyrine, etc., for cases of category B. Of course, in cases of both categories, rest, much more complete than is usually prescribed (even ocular rest by prolonged atropinization), and a general restorative treatment, are necessary. Change of scene and travel are useful, but should never be prescribed until all the visual defects have been corrected and convalescence is evident. Work should not be resumed except with the aid of the most appropriate optical correction, and by degrees. It must be added that there are eyes which can not be "corrected" with our present appliances, and in such cases the prognosis is bad, although temporary improvement may be obtained by proper medicinal and hygienic treatment. I would, lastly, suggest that tobacco is particularly injurious to persons whose third nerves are weak.

INTERNAL DERANGEMENTS OF THE JOINTS, INCLUDING LOOSE OR MOVABLE BODIES.

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The impunity with which the joints may be opened under antiseptic precautions has offered such increased facilities for studying their internal derangements that what were once threadbare subjects possess anew deep interest for the practitioner. The diagnosis, pathology, and treatment of the so-called "floating cartilages" has long occupied the attention of surgeons and furnished the ground for so many differences of opinion that it will be interesting to observe what light our modern methods have shed upon this subject. It would be impossible in the space of a journal article to do more than outline the recent work which has been done in this field. I shall therefore confine myself to the briefest possible statements of the facts which have been established or revealed by the modern methods of research.

It may be well to state in the beginning that I consider all statistics based on work done prior to the general acceptance and practice of antiseptic technique as worthless at present, except for purposes of comparison. I have therefore limited the work from which I draw my facts to the period from January 1, 1885, to the present date, assuming that this period covers about all of our experience in the systematic and general practice of antiseptic surgery. Ten years ago a man might have suffered from never so clearly marked symptoms of movable body in the joint, and yet if that body could not be felt and outlined, it would have been considered reckless surgery to open the cavity in search of it. We have learned, however, that these symptoms are not confined to floating cartilages and pedunculated bodies suspended in the synovia, but may be produced by various other derangements of the joint which it would be impossible to make out by palpation, manipulation, or indeed by any other method than the ocular or tactile examination of the internal arrangement of the joint. We may therefore include all these conditions, as Dr. H. W. Allingham has done, under the general term "internal derangements" of the joints. It may serve to get more closely at our subject to divide this into—

1. Derangements due to the normal constituents of the joint.
2. Derangements due to abnormal constituents.

Under the first of these we embrace all those disorders due to injury, disease, or displacements of the ligaments or cartilages of the joints.

Under the second we include all those conditions due to the development in the joint of abnormal bodies or the abnormal development of the villous fringes therein.

These disorders occur in the elbow, wrist, and other joints, but they are so much more frequent in the knee that most of our observations and facts are drawn from it.

The most important of the first variety are the *derangements of the semilunar cartilages* of the knee joint. Dislocation of these bodies has long been recognized as of somewhat frequent occurrence, and treated as of insignificant importance. They have been replaced, if possible, often only to be dislocated again; and where it was not possible to reduce the dislocation, they have been left and a splint or cap applied to the joint to restrain motion as much as possible. The diagnosis and reduction are not so simple as the descriptions of Holmes, Agnew, Gross, and other surgical authorities would lead us to believe, and they vary a great deal more in their character than we have heretofore been led to suppose. Their displacement may be very partial, and yet the loosened end or border may seriously interfere with functional use of the joint, and set up a chronic or subacute synovitis whenever the joint is used. Annandale has led the way in the study of these derangements and has reported five cases where he has opened the joint for them and found various disorders—tearing, folding, fracture, twisting of the cartilages. While a derangement of the cartilage had been surmised, it was impossible to learn exactly the condition till the joint had been opened. Mr. Herbert Allingham, following in the line of the former, has made an extensive study of these derangements, and his views are set forth at length in a brochure published by him in 1889. It has been shown that the internal cartilage is much more frequently deranged than the external. This may be explained by the fact that the tibia is usually fixed and the femur movable in the injuries that cause this derangement, and the internal cartilage, being less firmly attached to the tibia, is torn from its attachment by the force of the moving femur.

The cartilage may be detached from (1) the coronary ligaments; (2) their anterior attachment; (3) their posterior attachment; (4) the coronary ligaments and posterior attachment; (5) the coronary ligament and anterior attachment. They may not be entirely detached, but their ligaments may be stretched to such a degree that they become pinched by the movements of the joints. They may be broken, split, or torn into ribbons. The displacements may be produced by any forcible movement which carries the thigh inward while the foot is turned outward, or by sudden bending of the knee while the foot is rotated outward or inward, the former injuring the internal and the latter the external cartilage. The breaking or tearing of the cartilages is usually produced by a stroke upon the joint while standing on one leg. The mechanism and predisposing causes, such as relaxed ligaments, previous synovitis, rheumatism, etc., are discussed at length by Mr. Allingham in the paper referred to above. The symptoms of these injuries have much in common with what is usually termed sprain or strain of the joint, and the two conditions are frequently taken for each other. They are: history of injury; tenderness above the head of the tibia; inability to extend the limb completely; protuberance or depression upon one side or the other of the patella tendon when the leg is extended; acute pain as if something was jammed between the bones on forcible extension; difficulty and pain in straightening the limb after prolonged flexion; inability to walk up stairs rapidly, or to run; more or less lameness; and sometimes when the limb is forcibly flexed there may be a click or snap which is produced by the cartilage slipping back into place. These symptoms may all disappear and recur upon the slightest provocation—such, for instance, as crossing one leg over the other—until the condition becomes chronic and a subacute synovitis is set up, disabling the patient entirely and demanding radical interference.

The diagnosis between the different forms of derangement depends largely upon delicacy of touch and accuracy of observation. If the cartilage is completely torn away it may be felt in some remote portion of the joint as a floating body, and there will be a space between the femur and head of the tibia on the side from which it was torn; lack of similarity between the two joints may be detected by touch and observation. Where the anterior attachment is severed there may be an abnormal space between the bones, or the cartilage may protrude so that the surgeon may by pressure extend it over the head of the tibia. Where the posterior attachment has been torn, complete flexion will be interfered with and there will be a protuberance on the extero-posterior or intero-posterior aspect of the joint according to which cartilage is deranged. Where the coronary ligaments are torn and the cartilage is situated in the intercondyloid notch, Mr. Allingham says that when the leg is semiflexed and everted on the thigh there is an increased interval between the femur and tibia upon the internal or external side according to the seat of the injury. While the differentiation is not always absolutely correct, much may be accomplished in diagnosis by careful attention to the above points, and proper management in time may prevent a trivial injury becoming a permanent disability.

Treatment.—When the injury is of very recent occurrence and the symptoms are acute, an attempt should always be made to reduce the dislocated cartilage or piece thereof. This may generally be done without an anæsthetic, but sometimes this will be necessary. The evidences of reduction having been accomplished will be a click heard upon the cartilage slipping into place and the patient's ability to completely flex or extend the leg with little or no pain. The methods of reduction are as follows:

1. Flex the leg forcibly and then suddenly extend it.

2. Flex the leg slowly with constant pressure on the deranged cartilage by the fingers, thus trying to force it into place; the foot should be everted for the internal cartilage and inverted for the external cartilage in this method. The leg should then be suddenly extended.

3. "Flex the leg as much as possible on the thigh, drawing upon the tibia as if to separate the articular surface from the femur. Then rotate the tibia inward if the internal cartilage be displaced, and outward if the external cartilage be displaced. Both movements should be resorted to if the usual one does not succeed. Then extend the leg on the thigh quickly, but not with any great violence, at the same time pressing with the thumb upon the projecting cartilage." [Allingham.]

4. Place some body, such as the edge of a table or an

assistant's arm, in the popliteal space for a fulcrum, flex and draw down on the leg, at the same time rotating it and pressing on the projecting cartilage.

There are a number of variations of these methods described by different authors, but these four embrace all the essential procedures. When the cartilage returns to its position there may occasionally be heard, as said above, a click like the slipping of a bone into place; but this sound is not at all constant. The leg should be placed upon a splint extending from the thigh to the foot, and antiphlogistic remedies applied to the joint until all inflammatory symptoms have subsided, after which a plaster-of-Paris splint, including the foot, should be applied so as to control all motion of the joint, and the patient may be allowed to go about. This should be worn for from six to eight weeks.

So much for the acute form of these derangements, but it is the chronic form with which the profession is less familiar and to the management of which so much study has been devoted during the past ten years. After a cartilage has once been displaced the accident is very apt to recur, especially if any of the attachments have been torn; if the cartilage itself has been broken or torn, our efforts at replacement will be all in vain, and the patient's disability will reappear immediately upon taking off the splint. Operative procedure is the only course that offers us any hopes of cure in these cases. The unfortunate results of opening the joint before the days of antiseptic surgery have made the profession chary of operating in such cases. The statistics which I shall present further on in this paper, however, will show how groundless is this fear. The joints are but serous cavities and may be opened with greater impunity than the abdomen under proper antiseptic precautions. We need no longer dread these operations and their results. After properly diagnosticating our cases and excluding those in which age or other conditions contra-indicate operation, we should proceed at once to relieve them by fixation or removal of these displaced cartilages. I shall not go into the minutiæ of the antiseptic methods of opening the joint in these operations. Two or three points may be mentioned, however, as of special importance. It is generally best to open the joint by a longitudinal incision, half an inch to three quarters of an inch from the patellar tendon; all bleeding should be checked before the joint is opened; the edges of the synovial membrane should be carefully secured by thread retractors—loops of antiseptic silk—before searching the joint is begun. After the joint has been thus opened, the surgeon should ascertain exactly what is the condition of the cartilage, and then only can he decide upon what operation is to be done. If the cartilage is split or torn to ribbons, if all the coronary ligaments are torn away and the cartilage is folded and creased so that it can not be smoothed out, or if the anterior attachment and the coronary ligaments are both torn away, the cartilage should be removed as completely as possible. This is best accomplished by grasping the cartilage with a fixation forceps and drawing it outward and upward as far as possible. While it is held in this position by an assistant, the surgeon slips his left forefinger along its border and guides the scissors to the posterior attachment, which he clips off as closely to the tibia as possible. This operation is termed by Annandale "chondrectomy."

If the coronary ligaments are torn, but the cartilage is not crumpled up, Mr. Allingham sometimes sutures the cartilage to the head of the tibia, as is advised in the succeeding injuries. Although I have had no experience with this method, I should consider it at least a very uncertain procedure.

If the anterior attachment alone is torn, or if the coronary ligaments are stretched so as to allow too free movement and consequent puckering of the cartilage, the latter should be sutured so as to hold it in position. This operation is called "chondrorrhaphy," and is done by drawing the cartilage gently toward the wound and holding it firmly there while a Peaslee's or some similar needle is passed through the fibrous tissue surrounding the head of the tibia, beginning about half an inch from the top, and through the cartilage. The needle is then threaded with chromicized gut and withdrawn. The suture is then tightly tied. After either of the above-mentioned operations the joint should be irrigated with a 1-to-40 warm solution of carbolic acid until all evidence of bleeding disappears, and then closed *secundum artem.* Mr. Allingham includes the skin, synovial membrane, and the intervening tissues all in the same sutures; but the majority of operators prefer to close the joint cavity by a separate row of gut sutures in the synovial membrane, and include the other tissues in another. As to drainage, I confess that when I began the study of this subject I was prejudiced by my own experience against the leaving of drainage-tubes in the joints. After going over the history of a large number of cases, however, I must say that I am unable to conclude that the tube does any injury or retards in any appreciable degree the recovery. In one or two cases where it has been omitted, effusion into the joint has given the patient much pain and the surgeon needless anxiety. It may, I think, be laid down as a broad, general rule that where cutting, suturing, or much fingering within the joint has been done a small drainage-tube should always be inserted in the lower angle of the wound; if the joint has been simply opened and a floating body removed, the result will probably be equally good without it, and its omission will obviate the necessity of dressing the wound within forty-eight hours. The wound should be dressed antiseptically and the limb placed on a posterior splint almost straight. If no drainage-tube has been used, dressing will not be necessary for eight or ten days, when the wound will generally be found healed, unless there should be an elevation of temperature above 101° F., when it should be opened and treated as described below. If a tube is employed, the dressing should be removed after thirty-six to forty-eight hours; if there is no evidence of synovitis, the tube should be withdrawn at this time, a small pledget of iodoform gauze stuffed into the hole down to the synovial membrane, and an antiseptic dressing applied every three or four days. When the temperature rises above 101°, the dressing should be removed and the joint irrigated with a two-and-a-half-per-cent. solution of carbolic acid. If no tube has been used, it will be necessary to open the lower angle of the wound to accomplish this. There is a difference of opinion among operators as to how long the limb should be confined after the operation. Here, again, the operation which has been done should govern largely. If the cartilage has been removed, the joint may be liberated and brought into use earlier than if suturing has been done. In the first case passive movements may be begun at the end of the first week, and the patient may be allowed to use his leg as soon as there is no pain in bearing his weight upon it. Where the cartilage has been sutured, however, the joint should be kept absolutely quiet for four or five weeks, and its use should not be allowed under six weeks. The external sutures should be removed in five or six days if they are of silk. These remarks upon the treatment of the wound will apply to all the derangements of which I shall speak, and it will not be necessary to repeat them.

The above-mentioned derangements are, of course, confined to the knee joint, and have no analogues in the other joints. I do not propose in this paper to treat of those derangements of joints due to the relation of the parts having been altered by fracture of the bones, but where the injury has occurred entirely within the joint they come properly within the limits of our subject.

The second class of derangements which I shall notice is that of the articular cartilages themselves. After a severe twisting or jamming together of the articular surfaces of a joint, there sometimes occurs a more or less severe synovitis which subsides promptly enough under proper treatment, but leaves a limitation to the movement of the joint. Forcible manipulation will sometimes overcome this and restore the joint to perfect usefulness, but it occasionally happens that no reasonable amount of force will do so, and we are confronted with the question, Shall we open the joint or leave the patient to suffer, not only from the inconveniences of an imperfect joint, but also from recurring attacks of synovitis? When, as formerly, opening the joint resulted in a large percentage of deaths or stiff joints, a great responsibility rested upon the surgeon in deciding this question; but now, when the mortality is less than one per cent. and ankylosis less than four per cent., a greater responsibility still will rest upon him if he fails to give his patient the benefit of all that modern science has provided for him. These should all be opened under proper antiseptic precautions and the derangement remedied if possible. I have seen three such cases—two in the elbow and one in the wrist—in which the injuries were identical in character and consisted in partial chipping off of small fragments of the articular cartilage, and twisting it about into an abnormal position in the joint between the articulating surfaces. The joints having been kept at rest after the injuries, these particles became more or less firmly fixed in their new positions, and when the patients began to use the limbs again they obstructed motion. After failure to break up what was taken to be adhesions, the joints were opened and the above conditions discovered. In two the offending fragments were removed by a periosteal elevator and dressing forceps, but in the third the adhesion was so strong that it was necessary to dissect it off with scissors. An almost perfect result was obtained in every case. It is not necessary to go into the details of these cases. Such an injury may occur in any of the joints. When the fragment is completely detached it becomes a floating cartilage, and of such I shall speak later.

A third derangement of the joints is that described by Dr. R. F. Weir (*Medical Record*, July 16, 1892), in a late paper before the Section in Surgery of the New York Academy of Medicine. It consists in a duplication of the fibrous membrane from the surface of the patella and the adjoining articular surface of the femur. The folds were of sufficient length to be caught between the tibia and femur upon flexion. In one case there was an obscure history of injury and mild synovitis, and in the other a rheumatic diathesis to account for the hypertrophy. The symptoms first noticed in both cases were grating and roughness in the joint, accompanied by limitation of motion. In one there was inability to flex the limb after completely extending it, until the foot had been rested on the floor and the quadriceps extensor muscle relaxed. There was also difficulty in extension after complete flexion, but not so great as in the reverse motion. In the other case there was a locking of the joint at a point midway between flexion and extension, which could only be relieved by relaxing the quadriceps and pushing the patella upward. In general, the symptoms were those of a pedunculated body in the joint. Both cases were operated on by opening the joint and removing the hypertrophied folds with forceps and scissors. In one a drainage-tube was used and the patient recovered without any complications; in the other it was not used, and after forty-eight hours it was necessary to enlarge the opening in the synovial membrane to let out the accumulated serous fluid. The result in both cases was good. Such a condition might occur in the wrist, elbow, hip, or ankle joints, and it will be well for surgeons to bear it in mind.

Derangements of the Knee Joint due to the Alar Ligaments.—Of this class of derangements little has been written, and indeed, until Dr. Allingham's paper above referred to, their existence had not been well established, and nothing of importance has been written on the subject since that paper. According to him, the ligament may be enlarged from inflammation or hæmorrhage into it; it may be elongated; it may possibly be torn away, or a cyst or new growth may be developed therein, and as a result—

1. It may be pinched between the condyles of the femur and the semilunar cartilages.

2. It may interfere with the movements of the joint, cause the puckering of the semilunar cartilage, and then itself be pinched between the latter and the ligamentum mucosum.

3. It may be pushed into the joint by a thickened ligamentum patellæ and be nipped. Dr. Weir has reported a case (*American Medical Review*, June 26, 1886) which appears to be of this nature, but it is not distinctly described as such. Dr. Shattock has reported (*Lancet*, 1888, i, p. 775) a case of hæmorrhage into the alar ligament with disability and symptoms of dislocated cartilage. Dr. Bowlby has reported a like case, also one of inflammatory thickening of the ligament.

The symptoms are obscure; there is usually pain referred to one side of or immediately beneath the patella, with more or less swelling of the joint, a catching of the joint upon flexion and extension, a sudden giving way of the knee, accompanied by a sickening pain and followed by more or less synovitis, as in movable bodies of the joint. If, after rest, antiphlogistics, or counter-irritants, the pain returns upon resuming the use of the limb, an exploratory operation should be resorted to. If the alar ligament be found elongated and hypertrophied, it should be torn loose from its internal attachment—if, indeed, such has not already taken place—drawn well into the lower angle of the wound, and sutured firmly to the skin, the protruding portion being cut off with scissors. It would be dangerous to cut it off and leave the stump in the joint, as it contains an artery which might bleed into the cavity, and, moreover, as Dr. Allingham says, it would leave a surface uncovered by synovial membrane which might suppurate and thus destroy the joint. The two cases reported by him were clearly of this nature and the result of his treatment was perfectly satisfactory.

Time and space forbid my describing particularly "rheumatic thickening of the synovial membrane," tubercular alterations of the joints, and hydrops articulorum. They are all described in special treatises and works on general surgery. We may proceed, therefore, to the second class of derangements—viz., those due to abnormal developments in the joints. These are all of the nature of floating, movable, or pedunculated bodies in the joints, and differ more in their pathology than in their symptoms.

The principal varieties are:

1. *Fibrinous.*—These may be loose and floating or movable and attached to the joint surface, as may all of the succeeding forms. They are the melon-seed bodies of Hunter, and result (*a*) from flakes of fibrin in exudations attending synovitis of either traumatic or rheumatic origin. (*b*) From condensation of the fibrin of the synovia about a foreign body or clot of blood—*e. g.*, a needle, as reported by Dr. Shaw (*Trans. of the Path. Soc. of London*, vi, p. 328). It is doubtful if blood clots can produce these bodies, but extravasation into one of the villi and subsequent breaking off can do so.

2. *Fibrous.*—These arise from hyperplasia and detachment of the synovial villi or folds of the synovial membrane. They were described by Virchow as fibromata of the joints, and are composed of pure fibrous tissue without any tendency to osseous or calcareous change.

3. *Cartilaginous.*—These result from fractures or fragmentary exfoliation of articular cartilages. König has cited three such cases in the elbow joint (*Deutsch. Zeit. f. Chir.*, 1887–'88, p. 90), and Clark one, characterized by a piece of the patella being broken off into the knee joint (*Trans. of the Path. Soc. of London*, 1890–'91, p. 271); they may arise also from the detachment of ecchondroses in arthritis deformans. As many as four hundred of these have been taken from one joint. The size varies from that of a mustard seed to that of a pullet's egg.

4. *The Fibro-cartilaginous* arise from the synovial fringes of the joints. Cartilage cells are so frequent in the villi at the point where the synovial membrane is reflected upon itself that they may be said to be normal. Under the influence of inflammation these cells proliferate and form movable bodies which may break off into the joint or remain attached. In some, true bone forms in the center, the cartilage cells being arranged vertically immediately around it, and flattened out at a distance. When this occurs, the body is osteo-cartilaginous and belongs to that class.

5. *The Osteo-cartilaginous* arise from further development of the cartilage cells in the villi, as described by Rokitansky and Virchow, and referred to above; also from osteophytes or ecchondroses due to rheumatic or osteo-arthritis. Poulet and Villard (*Arch. d. phys.*, v, 1885) examined six cases of movable pedunculated bodies in diseased joints, and found them to consist of cartilage and bone, and to have originated in osteophytes which had undergone varying degrees of separation. The similarity of these to the loose bodies following injury led them to study the mode of development of these ecchondroses and osteophytes in diseased conditions of the joints. They found, in various stages of development, nodules of cartilage projecting from the articular borders, a sort of lipping of the border, as it were, covered by a fibrous membrane, continuous on one side with the periosteum and on the other with the synovial membrane. In the center of these nodules were bony nuclei with more or less dense trabeculæ and closely connected with the cancellous tissue of the epiphysis. Fracture through the neck of these nodules produces joint bodies which may be torn entirely loose and float in the synovial fluid, or may remain attached by their fibrous envelopes and simply be pedunculated movable bodies. These fibro-bony bodies continue to grow in size by imbibition, although entirely detached, but necrotic and traumatic joint bodies have a tendency to absorption. I am aware that Cooper, Recklinghausen, Poncet, and others deny this growth of unattached bodies, but Virchow admits its possibility, and Poulet, Villard, and Pattison (*Jour. Anat. and Phys.*, xxiv, p. 360) have actually observed it. These bodies are also said to result from quiet necrosis and sequestration of a portion of the articular surfaces, as first described by Sir James Paget (*Trans. of the Path. Soc. of London*, 1889–'90, p. 204; *Med. Record*, 1891, p. 700).

This mode of origin has been vigorously attacked of late by Mr. Humphreys (*Brit. Med. Jour.*, 1888, ii, 707), and with good reason I believe. The fact that there is a depression in the articular cartilage into which one of the loose bodies fits, does not prove, as Mr. Teale maintains (*Med. chir. Trans.*, 1885, p. 31), that it originated by necrosis at that spot. A body developing from the alar ligaments or from the villi may work for itself, while growing, a nest or resting place in the soft cartilage and not interfere with motion. But when by violence it is once displaced, it may interfere. It does not follow, though, that it is due to necrosis, unless a necrotic base be left from which it was detached, and such a case has not yet been demonstrated.

6. *Tubercular Bodies.*—These bodies are really fibrous, containing giant cells and tubercular deposits. They result

from tubercular deposits in the synovial villi (*Brit. Med. Jour.*, 1891, i, 522), and are associated with other forms of tubercular disease of the joints.

7. *Lipomatous Bodies.*—These result from (*a*) hyperplasia of the fat about the alar ligaments; (*b*) hyperplasia and herniation into the joint of the extrasynovial fat; (*c*) fatty degeneration of hypertrophied villi; (*d*) the lipoma arborescens of Müller.

Symptoms.—The symptoms accompanying these various forms of derangement are very similar. Excluding traumatic cases, loose or movable bodies can not exist in the joint not already diseased, and they often furnish the only evidence of pre-existing disease. Sir Benjamin Brodie first established the relation of the rheumatic diathesis to these bodies (*Path. and Surg. Observ.*, 1850, p. 261), and Rokitansky showed the relation of the cartilage cells in the villi to the osteo-cartilaginous variety (*Zeit. Wiener Aerzt.*, 1851). Unless there is a distinct history of injury or disease the patient is usually ignorant of any derangement of the joint. If there be such a history, examination of the joint may reveal to him the presence of a movable body. He is usually, however, made aware of its presence by its sudden and unexpected interference with motion. The body is caught between the articular surfaces of the joint and locks it at that point so firmly that the patient can neither flex nor extend the limb until the muscles are all relaxed. The pain which it causes is usually less severe in the wrist and elbow than in the knee. Here the cartilage is caught and pinched by the whole weight of the body, which causes an acute, sickening pain, the leg gives way and the patient may fall. He is unable to move the limb himself, and if the surgeon attempts to do so by force the suffering is intense. After relaxation, a night's rest, or under anæsthesia, the limb may be moved freely and the patient be mystified by the whole occurrence. Usually, however, there will follow a more or less severe synovitis and effusion into the joint, which will subside under appropriate treatment, and the patient may go for an indefinite period without a recurrence of the accident. These bodies, however, seem to enjoy being pinched, for when they once begin to interfere with the joint they continue to do so more or less frequently until they are removed.

Manipulation and examination of the joint after such an accident usually reveals to the surgeon, or even the patient himself, the presence of a movable body. The points at which they are most frequently felt are just beneath the quadriceps or upon either side of the patellar tendon. I have one under charge at present in which the body is attached about the level of the articular surface of the tibia. The symptoms are not so severe in the fibrous variety as with the organized bodies. There may be moist friction when the joint is moved or when the patella is pressed upon in this variety of derangement, and the bodies, being so smooth and freely movable, recede from the touch and are difficult to make out. Yet the subjective symptoms are sufficient to base a diagnosis upon and justify a radical or exploratory operation.

Treatment.—The management of these cases and the result thereof at the present day as compared with previous periods is the most important point of this paper. Rest in bed until the acute inflammation subsides is still the method all conscientious surgeons will advise at first, either putting the limb in splints or applying other antiphlogistic remedies. But from this point the paths of the old and new methods diverge. Formerly the body was sought for, pushed if possible to some point of the synovial sac remote from the articular surfaces, and there fixed, if possible, by bandages, adhesive plaster, and other appliances; a blister or actual cautery was applied over the point to set up a synovitis and consequent adhesions. The limb was inclosed in plaster or other variety of splint and so kept quiet for weeks or even months. After prolonged trial of such temporizing means, in vain, some bold surgeon would open the joint subcutaneously and try to slip the body into the subcutaneous cellular tissue, while others, still bolder, cut into the joint and removed the body complete. This was never done, however, until the body was caught and fixed, and then only as a last resort, where the patient's life was made miserable and his usefulness impaired by the derangement. Such methods of fixation may be tried now, but it should always be done with the patient's positive appreciation of the improbability of a favorable result. At the present day, however, when a joint may be opened with so little danger, it is the duty of the surgeon, when a diagnosis of a movable body has been made, to insist upon its immediate removal. The frequent pinching which is likely to occur may set up inflammatory action in the joint which is far more likely to impair or destroy its usefulness than a clean antiseptic opening thereof; and the dangers and confinement consequent upon an operation are infinitely less than those of palliative treatment, not to mention the uncertainty of the latter. These bodies grow, moreover, and the sooner they are removed the better for the joint. Even if the body can not be felt, and the symptoms recur, the joint should be opened and explored for attached movable bodies or pedunculated tumors which are out of reach. In hypertrophied villi or fringes consequent upon subacute or chronic inflammation of joints the only diagnostic symptoms may be a creaking or grating of the joint upon movement. These cases are often put aside as chronic rheumatism or inflammation of the joint and left to take their course, whereas operative interference would reveal their true nature and result in absolute cure. An exploratory incision into the joint is as justifiable as one into the abdomen and should be oftener practiced. The point of election for opening the joint is about three fourths of an inch from either side of the patellar tendon, but if the body has been located the incision should be made directly upon it, in a vertical line. The method of opening the joint and its after-treatment are described above and need not be repeated here. I shall not consume space in detailing cases. The bold, vigorous, and radical treatment of these derangements has been tried now for seven years, and we may confidently compare its results with those of former years. I am aware that statistics from published cases do not absolutely represent the result in any line of surgery, there being so much greater inducement to publish successful cases than failures. But this disparity is no greater at one period than another, and while large numbers of cases are unreported, it is from printed reports that we must obtain our data. There are no statistics of cases treated without operation, but there is no reason to believe that such treatment is curing any considerable percentage of cases. For comparison, therefore, we are confined to the operative treatment. Benndorf (Agnew's *Surgery*, p. 130) collected 216 cases, of which 143 were cured, 41 died, and 32 failed. Larrey (*Gazette d. hôpit.*, No. 67) brought the record down to 1860 with 167 cases, of which 115 cases were cured, 33 died, and 19 failed. Barwell (*Int. Ency. of Surg.*, vol. iv, p. 345), taking up the subject at this point, brought it down to 1884 with 88 cases, of which 73 were cured, 5 died, and 10 failed. The large increase in the percentage of cures in Barwell's statistics may, I believe, be attributed to the use of antiseptic and aseptic methods which had come into vogue in the larger hospitals during this time. Having taken the year 1885 as the period when such practice was thoroughly established, I have collected 77 cases of operation for movable bodies in the joints, of which 73 were cured, 2 improved, and 2 died, one from acute alcoholism and one from pulmonary tuberculosis. These two can not therefore be properly brought into the comparison. Add to these, 25 cases operated on for derangements of the semilunar cartilages and 7 for derangements of the alar ligaments, and we have 107 cases, of which none died, 104 were cured, and 3 failed, although not utterly. Observe the percentage and see what a stride has been made since Barwell's report. I have taken every case that I could find published, and if any fatal one has been omitted it has not been intentionally.

	Cases.	Cured.	Failures.	Mortality.
		Per cent.	Per cent.	Per cent.
Benndorf	216	66·2	18·99	14·81
Larrey, 1860	167	68·86	19·76	11·38
Barwell, 1884	88	82·95	5·68	11·36
Tuttle	107	97·19	2·81	.....

If one will look into the comparative merits of the two operations—the direct and indirect—he will see that although the mortality was formerly decreased by the latter, the percentage of failures was relatively much more increased. The uncertainty of the operation makes it unjustifiable at the present day, when the dangers of air entering the joint cavity are done away with by the use of antiseptic agents. With such encouragement before us no patient should be allowed to go about suffering from these internal derangements of the joints, and with such a record antisepsis may claim one of its most glorious victories in the field of joint surgery.

The Chicago Gynæcological Society.—On October 28th officers for the year were elected as follows: President, Dr. E. J. Doering; vice-presidents, Dr. Fernand Henrotin and Dr. Franklin H. Martin; secretary, Dr. Henry P. Newman; treasurer, Dr. A. H. Foster; editor, Dr. W. S. Christopher.

The New York Post-graduate Medical School and Hospital.—The corner-stone of the new building, at the southeast corner of Second Avenue and Twentieth Street, was laid on Wednesday afternoon, November 30th. An address was given by Dr. T. Gaillard Thomas.

PHARYNGO-MYCOSIS.*

By FREDERICK I. KNIGHT, M. D.,
BOSTON.

Inasmuch as the subject of pharyngo-mycosis has never been discussed or even mentioned, as far as I know, in a meeting of this association, I thought it might be profitable to start a discussion on the subject by a few introductory remarks, which would bring out the experience and opinions of members.

Ever since special attention has been paid to diseases of the throat, observers have been struck by the peculiar obstinacy of chronic folliculitis of the tonsils, which has been not infrequently accompanied by a similar condition of the base of the tongue, and occasionally of the arches of the palate and of the pharynx. An excellent description of this condition was given by Dr. J. Solis-Cohen in his work on *Diseases of the Throat*, also by Morell Mackenzie under the name of exudative follicular pharyngitis, and by Störk, who called it seborrhœa of the follicles of the pharyngeal mucous membrane.

The affection consists of whitish, yellowish, or grayish exudation situated at the mouths of the follicles in one or more or all of the above-mentioned regions—viz., the tonsils, base of the tongue, arches of the palate, and the pharynx, sometimes cheesy and easily removed, sometimes cretaceous, and sometimes only tough, stringy, running deep into the follicle and perhaps projecting far from it, very tenacious, and difficult to remove. Another peculiarity which has struck every one who has had to deal with these products is the quickness of recurrence after removal, and even after the subsequent application of strong medicaments.

B. Fränkel, of Berlin, in 1873 first pointed out an abundance of leptothrix threads in such products, and since then the relation has been noted and described at length by many observers—Bayer, Hering, Töplitz, Van der Poel, and others, and quite recently by Hemenway and Newcomb. Some of these have looked upon the parasite in a causal relation to the condition.

A number of other forms of parasitic growth in the throat have been described. Among others, Ubisch in 1875 first described a diffuse form of leptothrix of the tongue, in which its surface (sometimes both upper and under) is covered with a shiny, milk-white mass of sufficient density to obscure the papillæ. E. Fränkel and Sadebeck have described bacilli occurring in bundles which they called bacilli fasciculati. This form Hemenway finds more constant than leptothrix, and says that it differs from the latter in being longer and much more slender, besides occurring in bundles. Aspergillus mycosis has been described by P. Schubert and Siebenmann.

As said before, the leptothrix has been found so constantly that it has been looked upon by many as the essential causative factor of a pathological entity which has been called mycosis tonsillaris benigna (B. Fränkel) or pharynx-mycosis leptothricia (Hering). In the endeavor to establish a distinct disease of parasitic origin, however, certain differential points in diagnosis have been made which are not warranted. For instance, a distinction between this disease and folliculitis of the tonsil has been drawn in that the latter is attended with fever and systemic disturbance, whereas in mycosis there is no fever and no general disturbance, thus drawing a comparison between mycosis and acute folliculitis instead of making it with chronic folliculitis of the tonsil. Another point of distinction which has been given is that the contents of the follicles are always hard to remove in cases of mycosis and easy in cases of simple caseous secretions. This is not always true, as some cases have been reported in which the leptothrix threads were abundant, and yet the masses were easily expressed (Chiari, Jacobson).

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* Read before the American Laryngological Association at its fourteenth annual congress.

Until very recent years only one communication has been made in this country on this subject. In the April, 1882, number of the *Archives of Laryngology* Dr. Emil Gruening, of New York, published an article (without any allusion to the previous publications of Fränkel) which began thus: "While the constant presence of leptothrix elements in the mucus of the mouth and the frequent occurrence of concretions in the tonsillar crypts are facts with which every medical man is conversant, the relation existing between leptothrix buccalis and the formation of tonsillar concretions does not seem to have been recognized even by the throat specialist." From an examination of fifty cases, Gruening advanced the proposition that all tonsillar concretions were composed of leptothrix elements, and that the calcification of these masses might be induced by the presence of the alga leptothrix, just as the presence of certain non-parasitic algæ in liquids containing salts of calcium in solution induces a precipitation of the calcium in the form of a carbonate. He further says that "the presence of these concretions in tonsillar crypts and carious teeth is merely a substantiation of the more general fact that leptothrix concretions will form in all these normal and pathological recesses of the mouth and pharynx which are not reached by the ordinary process of cleansing, remain undisturbed by any mechanical action during the processes of mastication and deglutition, and are devoid of any secretory *vis a tergo* sufficiently potent to dislodge the parasite."

This is a strong statement of the case by one of those who believe that the parasite is the *fons et origo malis.* Other observers, notably Chiari, believe that the parasite is simply an accidental complication.

It would, however, seem reasonable to classify those cases in which the growth has become excessive, and is rapidly reproduced again and again on removal, as cases of mycosis, whatever the exact mode of origin, and although it is difficult, as stated by Newcomb, to say just where the process ceases to be a natural accident and becomes a pathological entity, the typical cases of tough, adherent, spear-like, projecting masses can be set down as cases of mycosis, but the less marked cases will be hard to classify.

In the treatment of typical cases of mycosis I have experienced the same difficulty as all those who have spoken or written on the subject, and have found nothing satisfactory but boring deep into each follicle with a galvano-cautery point. This, in some of the more extensive cases, is almost as tedious as the electrolytic treatment of superfluous hair. If it happens that any of the disease is situated on a part of the tonsil which can be excised, this will materially shorten the treatment.

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ON GASTRODIAPHANY.*

By MAX EINHORN, M. D.,
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In November, 1889, I published a short article under this title in the *Neu-Yorker medicinische Monatsschrift.* As this paper has not been printed in English, I think it best to give first a translation of the same, in order to thoroughly acquaint the reader with the subject, and then to add several new points. My first article on gastrodiaphany reads as follows:

"The desire to utilize sight—that sense which enables us to judge in the quickest and surest way—in the diagnosis of diseases of the stomach existed long ago, and led to the invention of Mikulicz's gastroscope. If, however, a method of examination is to be applied in practice, it must not be troublesome either for the physician or for the patient. Thus far the gastroscope has not come into practical use, because it consists of a metal tube, which is troublesome and painful to insert. However, for looking into the stomach an inflexible tube is necessary, in order that the canal shall not change. As it is not easy to look into the stomach, I had the idea, about two years ago, of photographing its interior. This should be possible by the introduction of an Edison lamp, as well as a very minute camera obscura, into the stomach on a soft-rubber tube. By suddenly closing the current, an instantaneous photograph should appear. Technical difficulties thus far have prevented me from realizing this plan. At the same time, about a year ago, Voltolini's article appeared on the translumination of the larynx. Voltolini has put the source of light outside of the neck, and has been enabled by means of this translumination to see clearly the interior of the larynx in the laryngeal mirror. This at once led me to the belief that it must be possible, by having the source of light within the stomach, to see the latter through the abdominal wall, or to make it translucent. With a light inside, the stomach forms a kind of a lantern, which ought to be recognizable through the translucent tissues. As small streaks of light are more perceptible in a dark room, I concluded likewise that it would be best to illuminate the stomach in a dark room.

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* Read in part before the Society of German Physicians, September 23, 1892.

"This idea has been put into execution by me and proved to be quite correct.

"For examination I make use of a very simple apparatus, which I have had made by the firm of J. Reynders & Co., of this city. The apparatus consists of a soft-rubber tube, at the end of which is fastened an Edison lamp (of hard glass) by means of a small metal mounting; from here conducting wires run to the battery; at some distance from the rubber tube there is a current-interrupter. The insertion of this apparatus into the stomach is no more difficult than that of the ordinary tube alone. I usually have the patient, in a fasting condition, drink one to two glasses of water, and thereupon insert the apparatus, lubricated with glycerin.

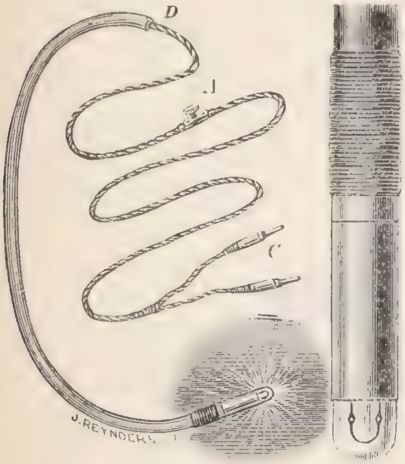

FIG. 1.—The gastrodiaphane.

"This method of examining the stomach I should like to designate 'gastrodiaphany,' for the stomach becomes translucent, and the apparatus serving this purpose the 'gastrodiaphane.'

"Our object is mainly to show the size and the situation of the stomach to the eye, and, secondly, to recognize tumors or other gross anatomical changes of the anterior wall of the stomach.

"After having frequently performed 'gastrodiaphany' in man, I noticed in perusing the literature that the idea of transluminating the stomach as just described had already been expressed in 1867 by Milliot and tried on animals. Milliot used for this purpose a narrow glass tube, in which there were two thin platinum wires connected with the electrodes of a Middeldorpf apparatus, so that in this way a bright light could be produced.

"In man, however, gastrodiaphany had not as yet been tried, and I am therefore the first who has made use of it. The apparatus serving for translumination of the stomach could likewise be applied to the examination of the colon. Here also the organ will have to be filled previously with water or with air.

"My investigations on gastrodiaphany are still in their infancy, and I would ask you at present to desist from a discussion on this subject until I have made a second communication.

"Suffice it to-day to show you that we are able to transluminate the stomach in man, and to make it apparent to the eye in an easy way."

[Thereupon the speaker demonstrated to the assembly gastrodiaphany on a patient, thirty-five years of age, suffering from dilatation of the stomach. The lower margin of the stomach in the navel line was to be seen.]

Since this first communication I have made use of gastrodiaphany as a means of examining the stomach mainly in my private practice, occasionally also at the request of colleagues in various hospitals of this city, and I should like now to express my opinion on the value of gastrodiaphany.

Before entering into the discussion of the proposed subject, I may be allowed to address Mr. Trouvé, who criticised in a few words the gastrodiaphane in a letter sent to the *New York Medical Journal.**

In this letter Trouvé calls attention to his polyscopes constructed in 1869, and especially to his gastroscope, by means of which "Professor Collin, of Alfort, since 1876, has been demonstrating to his pupils the interior of the ox's stomach in order to teach them the digestion of that ruminant."

Thereafter Trouvé adds: "My electric gastroscope also leaves Dr. Max Einhorn's gastrodiaphane just twenty years behind it."

In answer to these remarks I would say that the translumination of the stomach and the looking into the same are two totally different things. Gastroscopy has been practiced even on man, especially by Mikulicz, and the Leiter-Mikulicz gastroscope has been known to the whole world for many years. Whether Trouvé constructed his polyscope previous to Mikulicz or not I do not know. This, however, does not touch the question of translumination of the stomach. In reference to this point Trouvé says: "There is evidently no further occasion to speak here of diaphanoscopy. As a diagnostic procedure it was long ago condemned. . . . Dr. Milliot made experiments in Paris in diaphanoscopy upon the stomach of animals. In 1868 Dr. Lazarevic, of Karkoff, published a brochure upon the subject. *No undertaking in this direction has succeeded, and none could succeed.*"

This is the reason why Trouvé has not tried translumination, but endeavored to look into the stomach by means of the polyscope (or gastroscope).

As stated above, the gastroscope could not come into practical use on account of its being of stiff metal and offering in this way many difficulties. The gastrodiaphane, on the contrary, is thoroughly flexible, and just as easy to handle as the ordinary stomach-tube. For this reason it will, I hope, be used by the profession in general.

In order to avoid misconstructions, I have preferred to use the term "gastrodiaphany" instead of "gastrodiaphanoscopy," as it was previously termed. I intended thereby to express that translumination was not able to replace the looking into or taking into view the interior of the stomach; it is only possible by this method to make the stomach translucent, and thus to examine its condition of translucency. The word "gastrodiaphany" (translucency of the stomach) should in this way immediately indicate that the method enables one to judge about the contours, size, and position of the stomach; further also to determine whether the anterior wall of the stomach is not greatly thickened or occupied by a tumor, as under these circumstances the quality of translucency of the stomach would be decreased or entirely extinguished.

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* *New York Medical Journal*, May 28, 1892, p. 580.

The method of gastrodiaphany has been described above. I would add that I use Ford's storage battery, being the most suitable for the purpose, and that I examine the patient either in a standing or a recumbent posture. The stomach presents itself as an illuminated zone of a reddish hue on the abdominal walls; its contours can be discerned more accurately by pressing with the hand on the abdomen in the neighborhood of the translumination figure, or, speaking more correctly, by counter-pressing the stomach. By means of this manipulation the point in question is brought nearer to the source of light, in case the stomach is situated beneath it. Normally the translumination zone of the stomach is found in every individual.

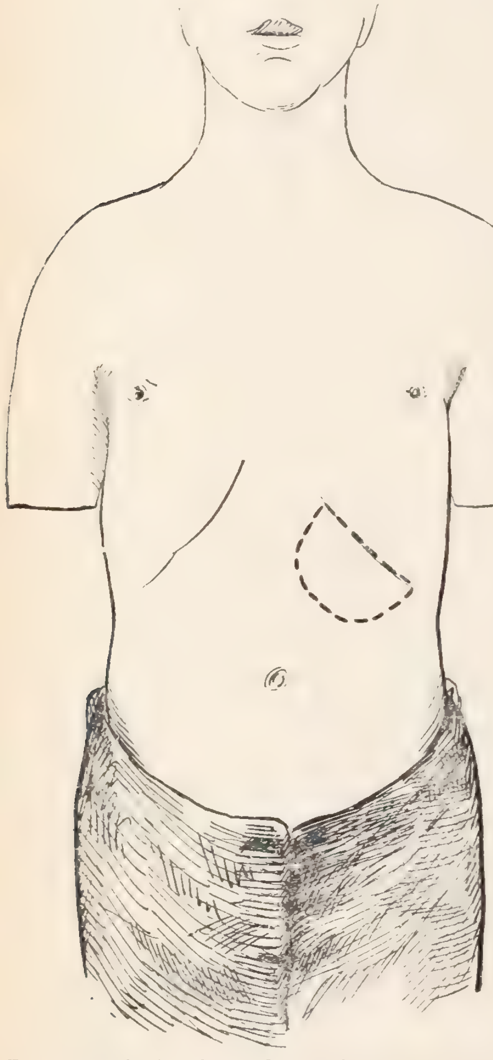

Fig. 2.—Transluminated zone of a normal stomach. (Schematic.)

It is of interest to observe that the stomach moves farther down during a forced inspiration—*i. e.*, the translumination zone is seen to descend. During a strong contraction of the stomach the translumination figure becomes considerably smaller. This can be frequently observed as soon as the patient tries to vomit during the examination.

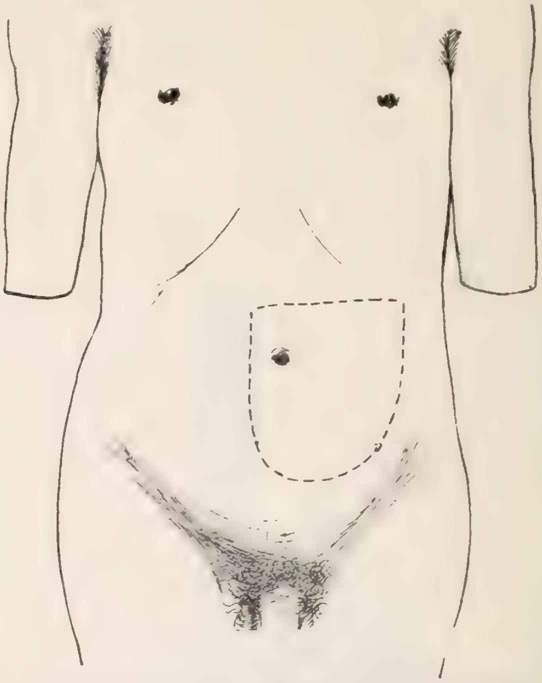

Fig. 3.—Transluminated zone of a dilated stomach. From patient H. B. (Schematic.)

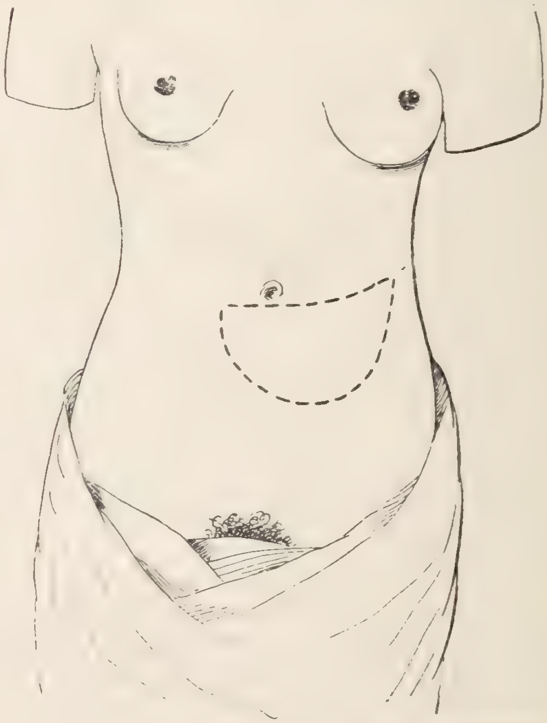

Fig. 4.—Transluminated zone of the stomach of Miss M. Z., suffering from gastroptosis. (Schematic.)

Three years ago I was able to demonstrate in the German Medical Society of New York that we could quickly perceive by means of "gastrodiaphany" a dilatation of the stomach—*i. e.*, that we could determine the size of the stomach. During the past three years I have frequently made use of gastrodiaphany, mainly in order to recognize with certainty dilatations of the stomach. I have, however, frequently compared the results of diaphany with those of the other ordinary methods (such as inflating the stomach with air or filling it with water [Dehio]), and usually found the same limits. Diaphany affords the advantage that it gives us the opportunity to see the stomach in its *natural* position, for the patient drinks only one or two glasses of water, which amount could not in any way distend the stomach. The two other methods (filling the stomach with gas or fluid), however, necessitate such large quantities of gas or fluid that the method itself might eventually effect a distention of the organ, and in this way conceal the natural condition. If the stomach is considerably dilated, one can see by means of the gastrodiaphane on the abdominal walls of the patient an intensely lucid lower zone, which is situated between the navel and the symphysis and goes over into a less intensely clear zone which sometimes borders the left margin of the ribs. The translumination figure corresponds with both that part of the stomach which is filled with water and that which is filled with air.

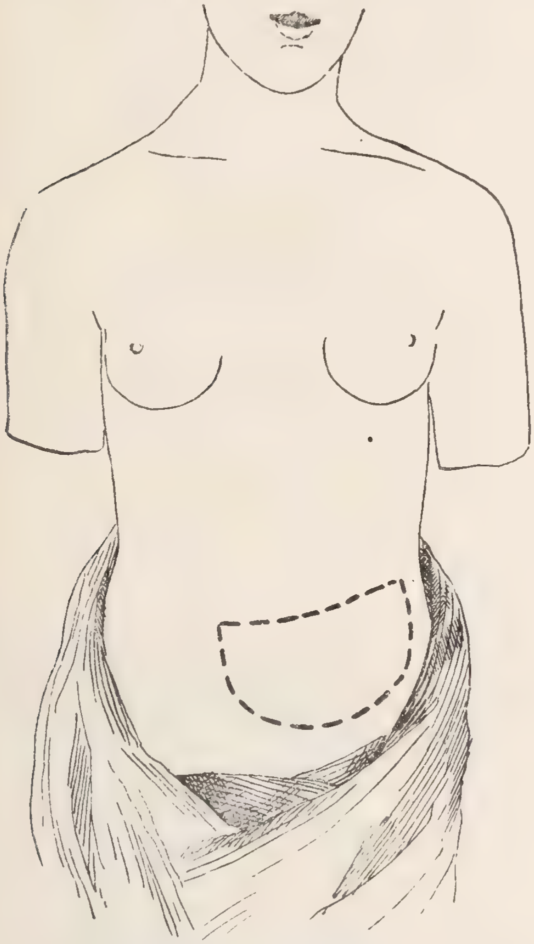

FIG 5.—Transluminated zone of the stomach of Mrs. P. F., suffering from gastroptosis. (Schematic.)

As an illustration of the numerous cases of dilatation of the stomach examined by means of the gastrodiaphane, I give one drawing which shows the exact figure obtained by translumination.

In contradistinction to dilatation of the stomach, the cases of gastroptosis (low position of the stomach) show a relatively small translumination zone, which is situated far below and extends from about the symphysis to the navel.

The following drawings, representing two patients with gastroptosis transluminated, will sufficiently illustrate the foregoing remarks.

As is well known, Ewald * has drawn attention to the necessity of determining the site of the small curvature before diagnosticating "gastroptosis." Ewald made use of the inflation method for this purpose. It is, however, quite apparent that in this respect gastrodiaphany will render more exact and striking results.

Recently I had an opportunity of examining a patient with carcinoma ventriculi in whom the translumination of the stomach was not apparent—*i. e.*, the field of translucency of the stomach was absent. In connection with other methods of diagnosis, one is enabled to state that the anterior wall of the stomach in this case is the seat of a thickening, which is most likely due to cancer. Permit me to describe this case more minutely:

William R., forty-eight years of age, bartender, has suffered from digestive troubles since the summer of 1891. At that time the patient could eat everything; vegetables, however, tomatoes and potatoes, gave him trouble—*i. e.*, he had then after meals an oppressive feeling for two whole hours; thereafter he used to feel free from pain. His appetite was poor. In June of this year he felt worse and weaker. Meat would not agree with him; as soon as he partook of it he would repent for some time, until at the end of about two hours he used to vomit. He can now partake of soup and bread, which agree well with him, and do not cause any trouble in his stomach. He has lost greatly in weight, which was formerly a hundred and sixty-four pounds, and is now only a hundred and twenty-five. He had never had distinct pains, with the exception of the oppressive feeling mentioned.

September 20, 1892.—Status Præsens.—A strongly built man with sallow complexion. Panniculus adiposus very sparse. Heart and lungs are intact. By palpation one can feel a resistance under the left margin of the ribs as soon as the abdominal walls are relaxed; this resistance shows an even surface, begins about two to three fingerbreadths beneath the ensiform process, is about 8 ctm. long, and moves a little during inspiration. On pressing, there is very little tenderness. There is no swelling of the glands. The liver and spleen are not enlarged. The urine is free from sugar and albumin. The patient is told to swallow some water: Meltzer's *Spritzgeräusch* (first swallowing sound) is heard immediately; there is no *Pressgeräusch* (second swallowing sound, which is heard usually about eight seconds after deglutition).

22d.—One hour after Ewald's test breakfast: HCl = 0; lactic acid present; rennet ferment = + little; acidity = 30. There can be found some remnants of food from the day previous.

23d.—When fasting: Tube No. 11 (about 1 ctm. in diameter) passes the cardia without any resistance; about 40 c. c. of decomposed stomach contents appear through the tube. The stomach is then washed until the water flows perfectly clear. Thereupon the patient drinks a glassful of water and is examined by means of the gastrodiaphane in a dark room; no lucid spots can be seen in the stomach region—*i. e.*, there is *no trace of translumination present.* When taking out the gastrodiaphane from the stomach, which this time has been done without interrupting the current, one sees the lamp perfectly illuminated.

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* Ewald. *Berlin. klin. Wochenschr.*, 1890, No. 12.

29th.—Patient is examined when fasting. The stomach contains about 30 c. c. of bad-smelling contents. The stomach is subjected to a thorough lavage. Thereupon the patient drinks a glass of water and is examined by means of the gastrodiaphane. The result of the examination is entirely negative—*i. e.*, there appears *no* translumination. [This time there were present several colleagues, to whom I successfully demonstrated (with the same apparatus) gastrodiaphany on two other patients.]

The negative result of gastrodiaphany in this case seems to indicate with certainty that the whole front wall of the stomach is thickened to such a degree that it can no longer transmit light.

As the cardia and the pylorus here are not strictured (thick sounds pass into the stomach without any resistance; on the other hand, there is no vomiting as long as the patient partakes of easily digestible substances), the result obtained by the diaphany examination appears to be still more valuable. In summing up the result of the chemical examination of the stomach with the other symptoms mentioned, it is evident that we have to deal in this case with a carcinoma which has caused a diminution in the size of the stomach and which has led to a thickening of its front wall. Although in this case the diagnosis of cancer of the stomach could be made even by the other methods of examination, the same becomes, however, more certain and the anatomical condition more clearly pointed out *by the negative result of gastrodiaphany.*

The value of gastrodiaphany would in this way consist of the following:

1. We are enabled to recognize quickly a dilatation of the stomach.

2. The condition called "gastroptosis" can with certainty be pointed out.

3. One is enabled to perceive tumors or thickenings of the front wall of the stomach by their lack of translucency. Whether indistinct translumination will also prove of some diagnostic value the future will have to show.

Before ending my article, I will discuss a paper which recently appeared and touches upon our subject. I refer to the paper of T. Heryng and N. Reichmann, entitled Ueber elektrische Magen- und Darmdurchleuchtung (*Therap. Monatshefte*, March, 1892, p. 128). Heryng and Reichmann in their thorough and able paper communicate the results of translumination of the stomach and large intestine. They consider the method as one which "could in certain cases disclose the position and the limits of the stomach." Heryng and Reichmann have made use in their investigations of an apparatus in which the lamp is cooled by means of a cold-water stream circulating in the instrument. According to my opinion, this arrangement in the apparatus is not necessary—for on the one hand the translumination of the stomach is accomplished after the stomach has been provided with water; on the other hand, the whole examination for gastrodiaphany can be done so quickly that there is no danger of the lamp becoming too heated. I always find the lamp of the gastrodiaphane when taken out from the stomach only lukewarm, never hot, for the reason that the water contained in the stomach prevents the lamp from getting too warm.

107 East Sixty-fifth Street.

REPORT OF
A CASE OF LATE HEREDITARY SYPHILIS,
WITH NASO-PHARYNGEAL LESIONS.

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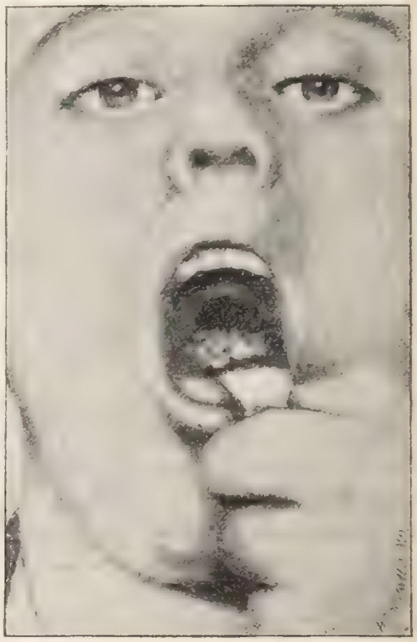
Late hereditary syphilitic lesions of the naso-pharynx are not common, and, as Dr. J. Mackenzie says, "often first attract attention to the existence of a diathesis of which they are the sole pathological expression." The case about to be reported demonstrates the truth of this proposition, and also shows the ravages these lesions will produce in the space of three years when not interfered with by treatment.

W. T., male, aged seventeen years and a half, was a helper in a foundry. His mother died some years ago from abortion due to a fall. His father was living, a dissipated character, who contracted syphilis previous to the birth of his son. The patient has one sister living and in fair health, who was born before the father had syphilis, and therefore has not inherited the taint.

This patient consulted me in March, 1891, in regard to his eyes, the sight of which had been poor since childhood, when he had "sore eyes." Upon examining the eyes I found the following conditions:



R. E. V. = light perception. The cornea was hazy and in its inferior third contained quite a marked opacity. The pupil was displaced upward and outward and bound by adhesions to the capsule of the lens. These synechiæ resulted from a former iritis, no doubt, a complication of interstitial keratitis, for the opacities in the cornea were such as are found after keratitis.

L. E. V. = $\frac{15}{70}$. Not improved by any lens. By oblique illumination a slight opacity was noticed in the inferior portion, while the whole cornea was somewhat hazy. An ophthalmoscopic examination of either eye was impossible owing to the contracted pupil of the right eye and the hazy condition of the cornea of both the eyes. The treatment for the eyes consisted in instilling into both eyes daily, for quite a while, a solution of hydrarg. bichlorid. (1 to 5,000). Calomel was also dusted into the eyes daily for some time. But neither of the drugs seemed to have any effect in clearing the corneæ, the vision remaining the same in both eyes during the whole course of treatment.

While examining his eyes my attention was attracted by the peculiar character of his voice—similar to that noticed in children having adenoid growths in the naso-pharynx. I then made an examination of the oro-pharynx and found the following interesting lesions (see photograph): The posterior portion of the hard palate, the soft palate, uvula, and part of the palatine arches had been destroyed by an ulceration. The edges of this triangular ulcer were red, swollen, and granular, and covered with mucopus. Hanging down from the left half of the naso-pharynx was a pinkish, rough, and soft growth, extending about a quarter of an inch below where the normal line of the left palatine arches would be. This growth was covered with muco-pus and completely occluded the left half of the naso-pharynx. I removed part of it by the galvano-cautery snare; the heated wire penetrated it readily without a great deal of traction. The patient also complained of a slight deafness of the left ear, with tinnitus aurium, due either to the pressure of the growth on the mouth of the Eustachian tube or to a collection of mucus in that part of the naso-pharynx. This subsequently entirely disappeared after the growth had decreased in size from treatment. The tumor was attached at its upper posterior part to the posterior pharyngeal wall and was partly movable. By a rhinoscopic examination the right half of the naso-pharynx was only visible and not obstructed. The right posterior naris was not obstructed, for the tumor only extended as far to the right as the sæptum, and the turbinated bodies were visible. But, attached closely to the right half of the posterior pharyngeal wall was a long, flat, or band-like growth of a pinkish color and soft in consistence, its anterior surface somewhat corrugated and covered with muco-pus. This growth, while not very prominent, extended from the roof of the pharynx downward, almost to the larynx, gradually decreasing in thickness. A laryngoscopic examination revealed no growths or ulcerations in the larynx, the mucous membrane and vocal bands being hyperæmic, due, no doubt, to the irritation resulting from efforts to expel the mucus in the larynx.

When first seen, the patient was put upon increasing doses of potassium iodide, beginning with ten grains three times daily until he took sixty grains daily. This was continued for two months. Great improvement was noticed; the edges of the ulcer of the hard palate became smooth and lost their red and granular appearance, while the growths in the naso-pharynx became smaller. The patient disappeared at the end of this two months' treatment, and did not return until about the middle of July of the same year for further treatment of his throat. During the time of his disappearance he had been working in a foundry where a great deal of rosin was used. The fumes from the heated rosin irritated his throat so badly that he had to cease work. Upon examining his throat at this visit I found the same lesions as above described, except that the ulcer of the hard palate had increased in extent forward, and there was now a larger opening through the palate. He was again put upon potassium iodide, increasing the dose from ten grains until he took thirty grains three times daily. This was continued three months, when I found that the angry and red appearance of the edges of the palate ulcer became again smooth and healed. The potassium iodide having disturbed his stomach, it was replaced by syrup of hydriodic acid, two drachms three times a day. This preparation has been well borne and exerted its therapeutic effect, for at the present time the ulceration of the palate has not progressed and has entirely healed. The mucous membrane surrounding its edges has regained a normal appearance. The growths of the pharynx have almost entirely disappeared and are only seen by a rhinoscopic examination. The left posterior naris is now open.

We do not find a great deal written about the naso-pharyngeal lesions of late hereditary syphilis. Dr. John N. Mackenzie, of Baltimore, was the first who wrote a monograph on this subject, and has devoted particular attention to its study. In Keating's *Cyclopædia of Diseases of Children*, vol. ii, Post cites Mackenzie's propositions:*

"1. That deep ulceration may invade the palate, pharynx, and naso-pharynx at any period of life from the first week up to the age of puberty. Of thirty cases analyzed with reference to the period of invasion, fourteen occurred within the first year. 2. When the eruption of inherited syphilis is apparently delayed until the latter period, that lesions of the palate and pharynx are found with a peculiar constancy, and often first attract attention to the existence of a diathesis of which they are the sole pathological expression. 3. That females are attacked more frequently than males. Thus, out of sixty-nine cases of pharyngeal ulceration, forty-one occurred in the former sex. 4. That ulceration may occur in any situation, but its most frequent seat is the palate. 5. That when situated at the posterior portion of the hard palate the tendency is to involve the soft palate and velum, and thence to invade the naso-pharyx and nose; while situated more anteriorly it seeks a more direct pathway to the latter, which is established by perforation of the bone. 6. That the next most common seats of ulceration, in order of frequency, are the fauces, naso-pharynx, posterior pharyngeal wall, nasal fossa, and sæptum, tongue, and gums. 7. That ulceration, especially that of the palate, shows a disposition to centrality of position, together with a special tendency to caries and necrosis of the bone. 8. That the tendency to necrosis exists at all periods of life, but especially in early youth, when it is more destructive and less amenable to treatment. 9. That while deep pharyngeal ulceration generally precedes or co-exists with similar affections of the larynx, the latter occurs too without evidence of pre-existing pharyngeal lesions. 10. That laryngeal ulceration does not commonly follow the pharyngeal destruction of so-called latent syphilis; those palato-pharyngeal ulcerations found in tardy congenital syphilis tend rather to involve the nasal pharynx and nose. 11. That simultaneous or consecutive ulceration of the palate, pharynx, and nose seems to be characteristic of syphilis, or at least occurs more frequently in this than in any other disease."

A Case showing Extensive Destruction of the Nerve in all the Turns of the Cochlea.—Bezold and Scheibe (*Arch. of Otol.*, xxi, 3) here describe changes found in the left ear of a man aged sixty-one years. In this labyrinth there was a more marked and extensive atrophy of the ramus cochlearis than has been before found, except in the case of a deaf-mute reported by Scheibe. The destructive changes and the development of new tissue, principally in the upper turn, might be referred to the basilar meningitis occurring twenty-nine years previously, but the changes were most marked in the third turn and not in the first. The bony defect in the upper portion of the cochlea might be a symptom of the general skeleton affection, but it seems more probable that the absorption of the bony cochlea was due to a previous inflammatory process.

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* *American Journal of the Medical Sciences*, N. S., clx, 321.

A CASE OF
HYSTERIA WITH SPINAL IRRITATION IN A MAN.

By L. P. WALBRIDGE, M. D.,
DECATUR, ILL.

In cases of neurasthenia the mode of manifestation is peculiar and varied in some cases, and difficult to determine. There is no disease which may not be simulated by this morbid condition of the nervous system. Individuals at times seem to be perfectly normal, but under certain conditions peculiar to the individual, or any mental impression from within or without, imaginary emotions or impressions produced over certain regions of the body will bring about a multitude of expressions from a slight disturbance to the more severe forms of nervous trouble, as convulsions and coma. In these neurotic cases there will be found almost always a hyperæsthetic condition. It may be pretty diffuse, or over certain localities, most often probably found over some of the spines of the vertebræ. It is a misfortune that a pathological condition can not be found in these cases which might enlighten us in our treatment and care of these explosive and uncontrollable nervous conditions. But as it may be, there undoubtedly exists a defect in the nutrition of the nervous system in part or whole. These cases are so varied, no two cases producing the same line of symptoms. The heart in some may be referred to as giving the patient a great deal of trouble. And, again, she may refer to her lungs and declare she has consumption, while in other cases they will refer to the kidneys, and others to their joints and muscles as painful. These painful conditions come on in paroxysms as do the convulsive form. The pain referred to is almost always diffused, not being confined to a certain nerve, as is the case in neuralgia. These painful parts may simulate angina if referred to the heart. Or if to the lungs, some acute affection of lungs. Or of joints and muscles, rheumatism. On making a careful physical examination, no organic disease of these organs will be found. But, of course, these conditions may coexist with other troubles, especially with organic. But after a careful examination from time to time, and if we find no physical evidence of organic trouble, we may feel convinced that these painful localities are not secondary to any organic disease, but originate from a morbid condition of mind and nervous system. In some of these cases there is complaint of a tired feeling constantly, but with all this the nutrition of patient may seem good.

At present I have a patient who has suffered from poor health for two years, but her nutrition seems good and at times perfectly healthy. But at times this nervous, morbid condition will seize her, and at times she will complain of pain in the region of the heart, and again she will complain of pain over one lung; she will shed tears and think she will die with heart or lung trouble. A careful examination of these organs reveals no organic trouble; the pain is diffuse, not confined to a single nerve. But on carrying my examination further in the region of the spine I found tenderness over the spines of the three upper dorsal vertebræ. The pain was so acute that the patient cried out and became very nervous.

In these cases, then, where we can find no organic disease and a hyperæsthetic condition is present, as over the spine and other regions of the body, we can feel assured that a neurotic condition exists—more than likely one of its divisions, hysteria.

This brings me to a most interesting case that came under my observation recently—hysteria with spinal irritation in a man. These cases being quite infrequent, I deem it interesting to report:

Mr. C., aged forty-eight years, a married man with a family of two boys and one girl. He attributes his trouble to a fall received in the army while in line of battle making a charge. While pursuing the enemy he fell over an old tree lying across the road. As soon as he got up he felt a severe pain in the head and back of neck, but in a little while it passed away, with the exception of a little stiffness. But when working in the field where the work required stooping, he found that his head and back of neck pained him so that he was compelled to cease work. About ten years ago, while papering a room, a severe pain located in back of neck seized him. A queer feeling came over him—as he describes it, a chilly sensation passing from back of head down the whole course of spine; he at once became rigid; he did not fall, but began moaning, which attracted his wife; she became alarmed and called help; he was carried to the bed and had several convulsions, keeping him in bed all day. From that time he has been subject to convulsions. It makes no difference where he may be, if anything unusual excites him he will feel that pain in back of neck and become nervous, and if it continues, will become rigid, then clonic; he loses consciousness for a moment, then regains consciousness and sheds tears.

He came to be examined in reference to his condition. I gave him a thorough physical examination. He is a sparebuilt man, apparently quite nervous, and he became more so. If the conversation is referred to his own case, he will complain of the approaching pain in back of neck and become so nervous that all conversation relative to his own case must be discontinued. During the course of the examination over the spine there seemed to be no tenderness until the occipital protuberance was reached, and thence extending down over the cervical spines for a distance of three inches there seemed to be an exceedingly sensitive area. I made some little pressure over this area, and at once he requested me to not do that again, for, as he expressed it, the pain went all over him. To convince myself that he was not malingering, I made a little harder pressure, and at once, like touching an electric button, the current went through him as quick as an electric current. He cried out, began to tremble, then became rigid, face flushed; then clonic convulsions set in and lasted for four or five minutes, mouth set. During the rigid period he became unconscious; but regained consciousness when clonic took the place of rigid condition. During the clonic period he shed tears and cried. He seemed very weak after coming out of this condition and was so nervous that he had to remain quiet for a few hours before he could leave for his home. He was fearful of leaving that night, for he thought the jar of the car would bring on another convulsion, for he had to go fifteen miles on the cars to reach his home. He made out, however, to reach home, but had been in the house only a few minutes before he felt the disagreeable feeling in back of neck. He warned his wife that he was going to have another convulsion. He had his convulsion, but it was not so severe as the one he had only a few hours before in my presence. Sometimes he will not have the convulsion, but will feel bad with that pain in back of neck and shed tears and become weakened after.

Being a farmer, while on his farm he is not troubled as much as when he is away from home. Anything exciting, as a horse-race, will predispose to a convulsion. At times he is perfectly well, and can do a good day's work. His family history is good. Both father and mother are free from any nervous trouble. His little girl seems to be inclined to be somewhat nervous; when helping her mother do the work she will at times let things fall from her hand. During these convulsions there is no foam at the mouth, and he does not bite his tongue, or fall as in epilepsy, but at first thought one is liable to take such a condition for epilepsy.

What, then, can be the primary cause for these nervous paroxysms? Is there a lesion located somewhere at base of brain, or in the medulla a localized inflammation caused by this fall? These parts being well supplied by nerves, a chronic thickening of these parts might set up a hyperæsthetic condition. And again a strain of one of the ligaments resulting into a permanent thickening. Or one of the cervical vertebræ, such as the atlas or axis, might be slightly displaced, causing pressure on the cord or surrounding nerves. He can rotate his head and can flex it, but can not extend it perfectly; he complains of pain when he extends his head. Thus, after a history of an injury and this localized pain referred to the injury, it seems to me to be reasonable to suppose this injury to be the prime factor in this case, although there did probably exist a neurotic condition.

MALTINE WITH PEPTONES
IN CERTAIN NERVOUS AFFECTIONS.

By GRÆME M. HAMMOND, M. D.,
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In certain nervous affections, particularly in epilepsy, and above all in the epilepsy of infancy, it is essential to provide a nourishing diet, and at the same time guard against gastro-intestinal irritation, which will invariably follow from overfeeding or from the ingestion of substances which the disordered digestive fluids can not cope with. Epilepsy in children is often induced by an inappropriate diet, and in such instances, and in fact in all cases, the cerebral irritation which invariably accompanies epilepsy reacts upon the digestive system and causes a great decrease in the quantity of the digestive juices secreted. In children over three years of age the ingestion of moderate quantities of nitrogenous foods materially assists their mental and physical development. This is particularly true of epileptics, yet it is just this element in the diet of the epileptic child which has to be omitted. The gastric juice converts proteides or nitrogenous foods into peptones, which are readily absorbed. But with a diminished quantity and altered quality of gastric juice, the proteides are not acted upon to any great extent, and hence, if nitrogenous foods are given, indigestion follows and greatly increases the liability of the patient to an epileptic seizure. Meats, albuminous and gelatinous foods, which are all nitrogenous, must therefore be eliminated from the diet of the epileptic. It is this class of food, particularly the meats, which gives muscular strength and vitality to the human organism. If, therefore, nitrogenous food which has artificially been converted into peptones can be introduced into the system through the stomach, its absorption and assimilation will be completed without the necessity of drawing upon and exhausting the limited quantity of gastric juice which the stomach is capable of secreting.

Recently I have used maltine with peptones in these cases. The peptones form an excellent combination with the maltine, since the latter is not only nutritious, but, by containing diastase, materially assists to digestion of the starchy foods. In this manner I have given nitrogenous food in those cases that particularly require it, and in a form which obviates all danger of gastro-intestinal irritation. Practically, the children thrive on it. Children who were doing well on medicinal treatment and an exclusively milk diet have improved more rapidly in strength and bodily condition when the maltine with peptones was regularly administered. Milk, which contains only about three per cent. of proteides, is the only diet I have heretofore allowed epileptic children to have. The gastric juice is capable of converting this amount of proteide matter into peptones, but is not capable of doing much more. Even with a liberal quantity of milk, a child three years of age and over does not get sufficient nitrogenous nutrition. With the addition of maltine with peptones to the milk diet a sufficient quantity of proteide food in a digested condition can be given with the result of materially benefiting the patient's physical condition.

The digestive organs of many people who suffer from neurasthenia refuse to perform their functions properly. As in epilepsy, the digestive juices are not secreted in anything like their proper proportions. This, of course, results in indigestion for all classes of foods, usually more for some than for others. In such cases I have found maltine with peptones very serviceable. The maltine promotes the digestibility of the starchy foods, while the peptones permit the daily quantity of nitrogenous food to be diminished without depriving the body of its nutrition.

From my experience with maltine with peptones I have come to regard it as a most valuable remedy in the treatment of disorders of digestion and for imperfect nutrition.

Cataract Extractions without Iridectomy.—Dr. Oren D. Pomeroy writes to us that the following statement of his results is believed to be more exact than the one given in his article published in our issue for November 12th:

Vision $\frac{20}{X}$—	1
" $\frac{20}{XX}$+	1
" $\frac{20}{XX}$	4
" $\frac{20}{XXX}$	6
" $\frac{20}{XL}$	9
" $\frac{20}{L}$	5
" $\frac{20}{LXX}$	6
" $\frac{20}{C}$	9
" $\frac{20}{CC}$	5
" $\frac{10}{CC}$	2
" $\frac{1}{CC}$	1
Lost by suppuration	1
	50

THE
NEW YORK MEDICAL JOURNAL,
A Weekly Review of Medicine.
Published by D. APPLETON & Co.
Edited by FRANK P. FOSTER, M. D

NEW YORK, SATURDAY, DECEMBER 3, 1892.

INFLAMMATION OF THE VERMIFORM APPENDIX IN CHILDREN.

THIS disease, to which so much attention has been accorded of late years, is especially common during childhood. Bland Sutton has demonstrated the marked anatomical similarity between the vermiform appendix and the tonsil. Both are composed to a large degree of adenoid tissue. Inflammation of the appendix, both simple and suppurative, bears a striking resemblance in its anatomical characters to simple and suppurative amygdalitis. This peculiarity may account for the tendency of the disease to recur, especially in the young. Sutherland, in the *British Medical Journal* for April 23d, calls attention to the close relationship that often seems to exist in children between inflammation of the appendix and the uric-acid diathesis. He has frequently found excessive quantities of uric acid and oxalates in the urine of children suffering from such inflammation. He refers to the calculi found in the appendix, but is not acquainted with their chemical composition. It would be interesting to know whether they are the same in character as the concretions frequently found in the crypts of the tonsillar follicles.

In a recent discussion at the New York Academy of Medicine, Dr. Lewis A. Stimson laid stress upon the frequency of recurrence, particularly in children, and upon the grave error of concluding that, because the patient has recovered from an attack, he has been cured of his disease. It had been his experience that in young subjects the disease frequently occurred without fever and with little or no local pain, and that suppuration, when it took place, was apt to be diffuse. Dr. Charles McBurney said that general symptoms, especially the state of the pulse and temperature, were frequently misleading, and that the local signs were of far more importance, especially localized pain. It is undoubtedly a fact that pus forms earlier in children than in adults. A chill is rare, and the whole course of the disease may be passed with but slight elevation of temperature. Indications for surgical interference can not be formulated with certainty. Any measure adopted as a last resort is certain to fail in many cases and fall into disrepute. An operation, to be successful, must be done early. It is now the opinion of many surgeons of the highest repute that when it has been decided that a process is present that is prone to end in the formation of pus the time has arrived to operate.

THE MORTALITY FROM SURGICAL OPERATIONS.

IN the *Annual Report of the Board of Health* of New York City for 1891 there is a table of a hundred and thirty-three deaths due to surgical operations. This is three tenths of one per cent. of the total mortality of the year, though we do not think that all the deaths caused by operations are so reported, for many are probably returned under the name of the disease for which the operation was performed.

There is one minor operation that is responsible for almost ten per cent. of the deaths due to operations, and that is circumcision. This is probably due to the operation being frequently performed by rabbis. In five of these cases erysipelas, septicæmia, or gangrene was specified as the cause of death.

There were two deaths caused by operations for fæcal fistula, three by operations for urethral stricture, and one by an operation on enlarged inguinal glands. But the greatest mortality caused by any operation is that of seventy-six deaths due to laparotomy, or more than fifty-seven per cent. of the mortality from operations. Eighteen of these deaths were after ovariotomies, three after hysterectomies, five after the removal of uterine tumors, sixteen after operations for various forms of salpingitis. It would seem from the large percentage of deaths from laparotomy that the operation was often attempted as a forlorn hope and that the worst was realized.

There is one feature of this table that impresses us, and that is the desirability of a uniform nomenclature. Abdominal section, laparotomy, and operation for some abdominal lesion are used in making returns, as well as the specific terms gastrotomy, hysterectomy, ovariotomy, and oophorectomy.

It is to be hoped that the time is not very distant when the medical profession and the public will sustain boards of health in requiring more specific returns than are now often accepted.

HYDROGEN PEROXIDE IN DIPHTHERIA.

DR. BENJAMIN WARD RICHARDSON writes to the *Medical Press and Circular* for November 9th a note on this subject. He confirms the statements of Dr. F. H. Williams, of Boston, as to the value of a thirty-volume solution of the peroxide in the local treatment of diphtheria. Dr. Williams had pointed out, in the *Boston Medical and Surgical Journal*, that many who used the peroxide employed solutions of insufficient strength to obtain the greatest degree of success in the treatment of diphtheria. As much as a thirty-two-per-cent. solution has been employed by Dr. Williams with gratifying success, both in the form of spray to the diseased throat and in the form of submucous injection in the same region.

Dr. Richardson states that when he began, in 1857, the medical employment of the peroxide, it was one of the rarest of chemical curiosities. He began by using it in the strengths of four and five volumes; then he moved up to twenty and thirty volumes, but he soon learned that with these higher volumes the oxidation was so rapid, in the presence of pus and similar disturbing substances, as to be "practically explosive in character." On one occasion a case of antral abscess came under observation, and he injected a drachm of a thirty-volume solution through an opening into the cavity made by the extraction of a tooth. He witnessed a reaction which for a few moments alarmed him, owing to the gush of purulent froth that followed. Diphtheria may be treated with the higher volumes, in localities where the surface is open, without the danger of creating excessive tension or laceration of the parts. The same indications, he states, may be held to apply to the cutaneous surface when it is the seat of senile gangrene, phagedæna, or syphilitic ulceration. The thirty volume solution may, he says, be the right one to be employed, but during the thirty years that have elapsed since his publication, made to the Medical Society of London, he has regarded the ten-volume solution as more suitable for general adoption.

At the close of his note Dr. Richardson states that he has seen pus-cavities and fistulæ heal satisfactorily under the use of the ten-volume solution, used frequently and in small quantities, and he thinks that in the treatment of fistula in ano the peroxide, applied by means of a pledget of lint on a probe, ought to supplant the operation with the knife in many cases.

MINOR PARAGRAPHS.

CONJUNCTIVITIS SET UP BY FLIES.

At a recent meeting of the London Ophthalmological Society, reported in the *Lancet* for November 19th, Dr. Berry, of Edinburgh, read brief notes of two cases of conjunctivitis set up by flies. The first case was that of an old man in whom severe inflammation of the cornea, accompanied by extensive corneal ulceration, came on within twenty-four hours of his having been stung in the eye by a fly which had apparently risen from a dunghill. In addition to the local disease, there was marked general prostration, and the patient continued feeble for months afterward. The whole course of the case seemed to indicate that the poison carried by the fly had produced the local inflammation and also some general poisoning. The second case was that of a man, aged twenty, in whom acute swelling of the right eyelid and conjunctiva came on two days after a fly had got into his eye. The inflammation soon became unmistakably diphtheritic and led to complete destruction of the cornea and to very serious general symptoms. It was not certain that the diphtheritic poison was introduced by the fly, yet the rapidity with which the symptoms followed the accident was thought to be at least suggestive. Mr. Caiger also mentioned a case which he considered analogous to the cases described by Dr. Berry. The patient, a stableman, received a blow in the eye from a worm derived from the intestine of a horse. Very marked chemosis of the conjunctiva followed, but gradually subsided. Mr. Caiger thought the condition might have been due to the introduction of some poisonous material contained in the excreta of the horse.

HOW A MAMMARY CANCER SHOULD BE REMOVED.

The paper on this subject read by Dr. Robert F. Weir at the last meeting of the Medical Society of the County of New York was exceptionally valuable. It would be very difficult to epitomize such a paper, but one point of the many put forward seems to deserve special mention. Dr. Weir deprecated the tendency of many general practitioners who attempt this operation to remove the disease incompletely and thus aggravate rather than benefit the patient's condition. The incisions should be free and widely distant from the tumor, and the lymphatic glands and fat in the axillary and subclavicular regions should be carefully and thoroughly dissected away, whether enlarged glands can be felt in those regions or not. Such careful and thorough removal has given quite a large proportion of cures, *i. e.*, cases in which recurrence has not taken place within three years. In the discussion stress was laid on the danger of too small incisions. They tend to induce dragging and squeezing of the tissues in the attempt to remove the growth, and by this means cancer cells are apt to be propelled into the circulation.

RESORCIN IN THE TREATMENT OF CHRONIC GASTRITIS.

Dr. W. H. Thomson reported at the same meeting a number of cases from his private practice in which he had used resorcin. In most of them he had noted a good effect, in others no effect at all. The latter had seemed to be mostly neurotic cases, while, regarding the former, the very important factor of other concomitant treatment and regulation of the diet had been omitted. A careful analysis of cases of stomach trouble treated in this or in any other manner is desirable and necessary for a thorough understanding of the subject.

THE INNERVATION OF THE BLADDER.

Zeissl, in the *Prager medicinische Wochenschrift* for October 19th, thus sums up the results of his experimental researches on this subject: The nervus erigens is the motor nerve of the detrusor and relaxes the sphincter vesicæ. The opening of the sphincter vesicæ results independently of the detrusor. The hypogastrici close the sphincter vesicæ. The motor effect for the entire bladder is very slight and is sometimes entirely wanting. The hypogastrici inhibit sometimes the spontaneous movements which occur in the bladder. In both the nervi erigentes and the hypogastrici the rule seems to hold good, which was demonstrated by Ehrmann, Fellner, and Oser, in regard to the intestinal nerves. This rule is that in the nerve trunk which furnishes motor innervation to a certain system of fibers, nerve fibers are at the same time present which furnish inhibitory innervation to the antagonistic fibers contained in this system. In accordance with this rule, motor fibers are found in the erigens supplying the detrusor, which is considered the longitudinal muscle of the bladder, and inhibitory fibers for the sphincter—*i. e.*, for the circular muscular fibers. In the hypogastrici, motor fibers pass for the sphincter, and, one may assume, at the same time inhibitory fibers for the detrusor.

SURGEON-GENERAL WYMAN AND THE TRANSATLANTIC STEAMSHIP COMPANIES.

Some of the daily papers are industriously circulating a report that several of the Transatlantic steamship companies are very much displeased with Surgeon-General Wyman's administration of the national quarantine, and that they are taking steps to displace him on account of the unnecessary detention of steamships. Surgeon-General Wyman has simply acted in accordance with the President's proclamation, and there could be no better commendation of his administration than his condemnation by the various agents of foreign steamship companies, who are generally far more solicitous as to the interests of their owners than as to the welfare of the people of this country.

THE PULLMAN CAR AS A LIFE-SAVER.

The London *Post* comments upon the railway disaster near Thirsk, Yorkshire, England, and shows that the long car of the Pullman pattern is much better adapted to resist the shock of collision than the ordinary Transatlantic passenger carriage.

The *Post* says: "In the former, long and heavy bearers running from end to end supply great resisting power; in the latter, built with transverse beams, a comparatively trifling shock causes the structure to collapse like an egg shell. The passengers in the Pullman car on the wrecked train escaped uninjured, while the ordinary cars in the front of the train were smashed into matchwood, and even those behind, which received a shock mitigated by the intervention of the Pullman, were considerably damaged." There have formerly been adduced various arguments as to the superiority of the long American car, and there is now added the most cogent one of all, perhaps, that it is stronger and safer in case of collision or derailment.

A "GOLD CURE" COLLAPSES.

We find an item of news in the daily papers that seems to indicate the positive decline and fall of the "gold-cure" craze. An establishment for the treatment of inebriety that was opened at Long Branch, N. J., in May last has closed its doors. The concern was incorporated under the style of the "New Humanity" gold cure. The capital said to have been required to carry on the undertaking has been estimated at $400,000.

SIR JAMES PAGET.

Among the pall-bearers at Lord Tennyson's funeral was Sir James Paget, who had also officiated in the same capacity at the funerals of Darwin and Browning. To have been invited to pay this last honor to the dead in the three most recent burials of great men in Westminster Abbey was not a mere coincidence; it testifies to the high esteem in which the distinguished surgeon is held in the minds of the greatest of his countrymen.

TOBACCO AND CHOLERA.

The Berlin correspondent of the *British Medical Journal*, referring to the large trade in cigars manufactured in Hamburg, states that experiments made in the hygienic institute of the Berlin University have shown that the cholera bacilli die more quickly on dry tobacco than on dry glass plates, that they do not multiply but quickly die on moist tobacco, and that tobacco smoke quickly kills the bacilli.

MEDICAL INCOMES IN BERLIN.

According to the *British Medical Journal*, the income-tax returns of Berlin show that the prospects of the medical profession in that city are not encouraging for beginners. There are 1,747 physicians, or nearly half of the profession in that city, who make less than $750 per annum, only 250 make $2,000, and only 170 more than $2,500 a year.

A FEMORAL CYST CONTAINING LUMBRICOID WORMS.

Lyon médical for July 13th quotes from a Spanish writer, Martinez, an account of a unique case. A woman, aged fifty, in good health, consulted him on account of a tumor of the right thigh that had existed about three years and had reached the size of a hen's egg. It was hard and indolent. The physician regarded the case as one of cyst and prescribed an ointment of iodide of lead. During the next three days the part became painful and necrotic action took place over the summit of the tumor. On laying the part open with the knife, there came into view a number of lumbricoids. The physician extracted eleven worms averaging ten centimetres in length and of the size of an ordinary penholder. The wound healed completely in three weeks. The author has been able to find no other similar case in the literature accessible to him, and he thinks he is warranted in styling the case unique.

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending November 29, 1892:

DISEASES.	Week ending Nov. 22.		Week ending Nov. 29.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	0	0	0	0
Typhoid fever	31	12	16	6
Scarlet fever	76	13	81	10
Cerebro-spinal meningitis	2	3	1	1
Measles	43	7	82	6
Diphtheria	98	39	97	35
Small-pox	5	1	4	1

The New York Polyclinic.—Dr. Andrew J. McCosh has been elected professor of surgery; Dr. W. H. Katzenbach, professor of general medicine; Dr. Florian Krug, professor of gynæcology; and Dr. Edward B. Dench, professor of otology. Dr. A. G. Gerster will continue his clinical teaching on two days of each week at the Mount Sinai Hospital and the German Hospital.

The New York State Association of Railway Surgeons.—At the second annual meeting, on November 14th, Dr. George Chaffee, of Brooklyn, was re-elected president.

The Post-graduate Medical School of Chicago.—Dr. John Ridlon has been appointed professor of orthopædic surgery.

A Reception in Honor of Dr. C. Theodore Williams, of London, was given by Dr. Rufus P. Lincoln on Tuesday evening of this week.

Dr. Morris H. Henry announces that he has resumed practice (in consultation only) after a long illness which he attributes to overwork and malarial infection.

The Death of Dr. Franklin H. Hooper, of Boston, a well-known laryngologist and physiologist, took place on Tuesday, November 22d. The deceased was forty-two years old.

The Death of Dr. Walter Carpenter, of Burlington, Vt., took place on November 9th. The deceased, who was formerly professor of materia medica in the Medical Department of the University of Vermont, was nearly eighty-five years old.

The Death of Dr. Elijah C. Kinney, of Norwich, Conn., removes one of the ex-presidents of the State Medical Society. He was an interne at Bellevue Hospital in 1859. He died on October 19th, in his sixty-third year.

Changes of Address.—Dr. Louis F. Bishop, to No. 36 West Thirty-fifth Street; Dr. L. M. Michaelis, to No. 1090 Lexington Avenue.

Society Meetings for the Coming Week:

Monday, *December 5th:* New York Academy of Sciences (Section in Biology); German Medical Society of the City of New York; Morrisania Medical Society (private); Brooklyn Anatomical and Surgical Society (private); Utica Medical Library Association; Corning, N. Y., Academy of Medicine; Boston Society for Medical Observation; St. Albans, Vt., Medical Association; Providence, R. I., Medical Association; Hartford, Conn., Medical Society; Chicago Medical Society.

Tuesday, *December 6th:* New York Obstetrical Society (private); New York Neurological Society; Elmira, N. Y., Academy of Medicine; Buffalo Medical and Surgical Association; Ogdensburgh, N. Y., Medical Association; Medical Societies of the Counties of Herkimer (semi-annual—Herkimer) and Saratoga (Ballston Spa), N. Y.; Hudson, N. J., County Medical Society (Jersey City); Androscoggin, Me., County Medical Association; Baltimore Academy of Medicine.

Wednesday, *December 7th:* Society of the Alumni of Bellevue Hospital (private); Harlem Medical Association of the City of New York; Medical Microscopical Society of Brooklyn; Medical Society of the County of Richmond (Stapleton), N. Y.; Penobscot, Me., County Medical Society (Bangor); Bridgeport, Conn., Medical Association.

Thursday, *December 8th:* New York Academy of Medicine (Section in Pædiatrics); New York Academy of Medicine (Section in Genito-urinary Surgery); Society of Medical Jurisprudence and State Medicine; Brooklyn Pathological Society; Medical Society of the County of Cayuga, N. Y.; South Boston, Mass., Medical Club (private); Pathological Society of Philadelphia.

Friday, *December 9th:* Yorkville Medical Association (private); German Medical Society of Brooklyn; Medical Society of the Town of Saugerties, N. Y.

Saturday, *December 10th:* Obstetrical Society of Boston (private); Association of Alumni of the New York Hospital (annual).

Letters to the Editor.

PAPER-RAGS AND CHOLERA INFECTION.

110 Nassau Street, New York, *November 23, 1892.*

To the Editor of the New York Medical Journal:

Sir: I am under great obligations to Dr. Allan McLane Hamilton for a suggestion made in his letter published in your issue of November 19th. In the correspondence I have had with Dr. Hamilton as secretary of the Medical Advisory Committee of the Chamber of Commerce it has been my contention that, inasmuch as there are no cases on record of the importation of the germs of cholera in baled rags, it is unfair and unjust to a great commercial interest to decree the exclusion or the disinfection by an expensive process of all rags, whether they come from infected ports or not. In the letter referred to, Dr. Hamilton says that I have evidently neglected to avail myself of his advice, that I consult the medical authorities, and adds:

"He . . . ignored the fact recognized and acted upon by all civilized people, that not only cholera, but other infectious diseases, are carried in textile fabrics that have come into bodily contact with infected subjects. He could have easily found the information he desired in the *United States Government Report of the Cholera Epidemic of 1873* or in accessible authorities."

While I have by no means been so neglectful of the accessible authorities as Dr. Hamilton intimates, his reference to the *Government Report of the Cholera Epidemic of 1873* affords me an opportunity to call his attention to a significant passage in that valuable volume. The first paper printed in the Government Report is by Dr. John M. Woodworth, at that time Supervising Surgeon of the United States Marine-Hospital Service upon The Introduction of Epidemic Cholera through the Agency of the Mercantile Marine; Suggestions of Measures of Prevention. From Dr. Woodworth's paper I quote the following paragraph (page 9):

"It has not yet been demonstrated that merchandise, in contradistinction to passengers' luggage, is ever the medium of conveying the cholera poison across the Atlantic. Even upon infected vessels the cargo is so protected from any chance of contact with cholera ejections that the risk of importation from this source is of little practical moment. Of course, upon a very foul ship carrying steerage passengers suffering from cholera, there is a bare possibility of such contact; but no instance of this kind has ever been known to occur."

A diligent examination of this volume will convince Dr. Hamilton that wherever "fabrics" are referred to, in its pages, as the medium of transmitting infection, the term is used to cover, not merchandise—certainly not baled rags—but the wardrobe and personal effects of passengers, especially of steerage passengers.

To the testimony of Dr. Woodworth I may add the statement made at the meeting of the American Public Health Association in 1885, by that eminent authority, Dr. John S. Billings, as quoted in your issue of November 5th: "I say that there is no evidence that baled imported rags have been the cause of disease in this country." As you justly say, this statement of Dr. Billings's remains unrefuted. The testimony of Dr. Charles F. Withington, in the *Eighteenth Annual Report of the Massachusetts Board of Health*, and that of Dr. Koch may be adduced to the same effect. In short, I challenge Dr. Hamilton to bring forward any authentic evidence that cholera infection has ever traversed the Atlantic in imported rags.

Dr. Hamilton declares that the public use of his letter was "entirely unauthorized." I can not believe the point well taken. Dr. Hamilton is secretary of the Medical Advisory Committee of the Chamber of Commerce. His committee gave a professional opinion to the Chamber of Commerce, of which I am a member. I wrote to him asking for the medical evidence on which a certain statement in that opinion was based. The tone of the letter he sent to me in reply and of the letter he addressed to your *Journal* is equally surprising and unsatisfactory; in my view the correspondence was official, not personal. Had Dr. Hamilton's letter been marked personal or private it would have been so treated by me; he certainly has neither refuted my assertion nor sustained his own. Augustine Smith.

Proceedings of Societies.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

Fourteenth Annual Congress, held at Boston on Monday, Tuesday, and Wednesday, June 20, 21, and 22, 1892.

The President, Dr. S. W. Langmaid, of Boston, in the Chair.

(Continued from page 581.)

Pharyngo-mycosis.—Dr. F. I. Knight, of Boston, read a paper on this subject. (See page 625.)

Dr. D. B. Delavan, of New York: In my hands rough and severe mechanical means in the treatment of these cases have proved unsatisfactory. By the use of the galvano-cautery and scraping instruments, the exuberant part of the mycotic mass may be removed, but generally enough is left behind to establish renewed growth, and in the course of time the condition returns to its former state. Treatment of this kind if persisted in becomes irritating and annoying to the patient, and ends unsatisfactorily. But when such treatment has not been too severe and has not been carried too far, and has been aided by frequent application of solutions of borax and of bichloride of mercury to the throat, the best results have been obtained. The patient should spray the throat with a fairly strong solution of bichloride of mercury once or twice a day, and several times a day with the borax solution, touching the entire surface involved by the leptothrix. In addition to this, attention should be given to the digestion. Many cases in which, after local treatment, the white spots still persisted, have showed marked improvement after the correction of some error of the digestion. Recurrence of indigestion has sometimes been followed by a return of the mycosis. Up to the present, then, I have found the best treatment to consist in scraping away the masses, but without causing too much irritation, thorough cleansing as described above carried out systematically by the patient, and attention to digestion and assimilation. All foci for the development of the leptothrix or of other micro-organisms that may be concerned in the production of this disease should be carefully investigated and cleansed. Thus, carious teeth should be filled or removed, the stomach washed by the Dujardin-Beaumetz method, and everything done to keep the various corners and depressions of the pharynx as thoroughly clean as possible.

Dr. T. A. De Blois, of Boston: In the management of these cases of mycosis I have usually found it necessary to treat other conditions as well. I have very frequently employed alkaline treatment of the stomach at the same time that I scraped out the deposits of leptothrix. As a curette for the latter purpose I have sharpened and bent the little scoop used for removing cerumen from the ears, put it into a little vise, and found it answer the purpose very well indeed. After curetting out the mycotic masses a mild astringent—say a solution of nitrate of silver, twenty grains to the ounce—should be used. But it is important, as Dr. Delavan has already said, to correct any disorder of digestion.

Dr. Delavan remarked that lavage of the stomach was also useful.

Dr. S. Johnston, of Baltimore: The cases of this nature which have come under my observation have invariably been in debilitated subjects, usually school children or men who are much overworked and suffering from disordered digestion. These deposits have occurred at the base of the tongue, and looked almost like spicula of bone, caused the patients much discomfort in swallowing, and were accompanied with impairment of nutrition. The cases which I have seen have been completely relieved, and the course which I have adopted has been to look after the digestive apparatus, give calomel and soda, afterward a tonic, and locally use chromic acid and bromide of iodine.

Dr. J. C. Mulhall, of St. Louis: In my opinion, this condition of pharyngo-mycosis may be either acute or chronic. It may disappear spontaneously—that is, without treatment. It may recur again and again. I have had one case under observation six years. It is very difficult at times to judge whether our efforts have effected a cure or whether this result is due to Nature alone. I agree with all that has been said as showing that the condition of the stomach has much to do with it. It has been told me by two patients, without suggestion from me, that recurrent attacks have been coincident with recurrent attacks of indigestion. As to treatment, I have found nothing of effect except attention to the stomach. Dr. Bremer, of St. Louis, has under culture quite a number of specimens from one of my cases, also microscopical sections which I may show at the next annual meeting, but, so far as his studies have gone, there appears to be no special bacillus connected with this mycotic process. Some of the gentlemen have spoken of these growths as being from the crypts of the tonsils. It has seemed to me they are from between the crypts, and there they project, long and slender, resembling a cock's comb, whereas at the base of the tongue they are round and resemble a pea in shape. The symptoms are mechanical—tickling or sensation of dryness or burning, or some sensation which would not bring to my mind any other acute affection of the throat whatever. The difficulty may be acute or chronic, may recur, may disappear spontaneously.

Dr. J. Wright, of Brooklyn: In two or more cases of pharyngo-mycosis I have examined the affected structures under the microscope. It has seemed to me that such cases of pharyngitis differ from other forms in having some systemic condition which furnishes nourishment for the fungi present, for they are fungi and grow like a plant in suitable soil. In one subject they become exuberant, in another the ground is unfavorable, and they only grow sparsely at the bottom of the tonsillar crypts.

Dr. Beverley Robinson, of New York: I was familiar with this condition from reading several years ago, and since then have diagnosticated it in four cases. One of the patients had been under the care of Dr. Gleitsman, and everything had been done locally in the way of using the curette, etc., for its cure, without success. There was no doubt of the condition present, and also no doubt of the fact that the patient got rid of it only after going through a course of treatment at Sharon Springs. Whether the sulphur waters had anything to do with the cure I am unable to say.

Dr. Mulhall: As to contagion, I tried to determine this, but was unable to do so. Yet, in the last case I saw, the patient told me that her room-mate, who occupied the same bed, was similarly affected. As to local mechanical treatment, I think the only effect it can have is to remove the larger projections, and these I have seen even as large as the end of my finger. I do not think nitric acid would be of any use, and I have tried caustics, germicides, etc., but nothing seemed to benefit except general treatment.

The President: When the title of this paper was announced it excited a good deal of curiosity on my part, for it so happened that I had three troublesome cases during the winter, in all three of which the physician was called upon to do his utmost. All three occurred at the same time, and were so alike that various kinds of treatment employed could be compared as to efficacy. Two were in young females, the other in a male. All were robust. In none was there any evidence of dyspepsia, or of anything except the mechanical trouble which came from the presence of these growths. In all three they consisted of the hard, spear-like masses to which Dr. Knight has referred; in the three the growths existed in the tonsils and at the base of the tongue; in none did they exist in the palate. The means used were various, but I did not try fuming nitric acid. Certainly the treatment by acids—not fuming nitric acid—was of no service. That which I resorted to finally, and which resulted in almost complete cure of the three cases, consisted in violently pulling away the growths and cauterizing as deeply as possible with the cautery point. The growths seemed to take hold of the tissues, did not lie loosely in the already formed lacunæ, but clung somewhat firmly, so that their removal was followed by a little blood. It is also true that I saw no renewal of the growth after removal and cauterization, but I could see successive crops make their appearance, smaller ones which were buried in the tissue coming to the surface where they could be removed later. The very method which Dr. Delavan described, of frequent spraying with a solution of borax and less frequent spraying with bichoride of mercury, I found of no avail whatsoever in these three cases. Where these masses protruded horn-like, even the curette was powerless to remove them. They had to be seized with forceps, be violently removed, and the base afterward be cauterized. I have not considered them indicative of a wrong systemic condition, but have looked upon them as local, as accidental; but I am perfectly willing to admit that many conditions of the buccal pharynx have their origin in a systemic condition, and it may be that those tonsillar masses, which we frequently remove by merely opening the lacunæ and scraping them out, have their origin in some constitutional trouble or dyspeptic state.

Dr. F. I. Knight: There is no doubt that if the secretions of our mouths should be examined, probably more than half of us would be shown to have the leptothrix elements with us, although in small numbers; but something sets these elements into developmental activity in certain cases. Some of the cases which I saw were in strong subjects, and, as Dr. Langmaid has said, probably some local condition was the cause. When the trouble has got started and fully developed, I can not conceive of any constitutional treatment which would alone have a curative effect. I can, however, conceive that it might develop in low states of the system, and that correction of the systemic disturbance would retard further development and aid local treatment. But in my experience all mild measures, such as the application of solutions, which must necessarily be superficial, have comparatively little effect upon the disease when it is deeply seated, and the only procedure which does answer is removal of the masses mechanically as far as it can done, and then the application of a destructive agent. I said the galvano-cautery, because it is easily applied and answers the purpose. Nitric acid introduced into the deep recesses would, of course, accomplish the object. After this has been done, there is every reason why we should fortify the constitution against the tendency to the development of these parasites.

(*To be continued.*)

Reports on the Progress of Medicine.

GENERAL SURGERY.

By M. L. FOSTER, M. D.

Laminectomy for Pott's Paraplegia.—Lloyd (*Annals of Surgery*, October, 1892) presents an exhaustive consideration of the literature on this subject, in addition to a number of hitherto unpublished cases. In 1889 Thorburn was able to find only eleven cases, but at present seventy-five have been collected. The writer is of the opinion that the operation is applicable to less than fifty per cent. of the cases of Pott's disease, but still holds an important place in the therapeutics of this disease, and will hold a more important one when its limitations are more fully understood and its technique simplified. He suggests the following as a guide until a larger number of cases enables us to determine upon fixed rules:

The operation is contraindicated in cases where there are other complicating tubercular lesions, and in cases where mechanical treatment has not been applied. It is indicated in cases where posterior spinal disease is made out as the cause of the paraplegia; in cases where the lesion seems to indicate the failure of mechanical treatment—*i. e.*, where dislocation has occurred, or where a sequestrum is causing the compression; in cases where, during the employment of intelligently applied apparatus, the symptoms continue to increase in severity; in cases where, after a certain period of careful mechanical treatment, the condition has remained stationary; and in cases where pressure myelitis threatens the integrity of the cord.

He states his views more briefly thus: "The operation should not be undertaken while there are any good chances of recovery without such interference, but it should not be postponed so long that an ascending or descending myelitis may destroy the patient's chances of recovery, and the first sign of a degeneration of the cord should indicate immediate operation."

In the seventy-five cases reported, twenty were adults and thirty-nine children. In the remainder the age was not noted. Thirteen of the adults and sixteen of the children died. The prognosis seems to be influenced also by the region involved. In fifty-three cases the dorsal region was involved, giving eighteen recoveries, seven improved, eight not improved, and nineteen deaths. Of three cervical cases, two patients were cured and three died. In one involving the cervical and upper dorsal and in another the dorso-lumbar regions the patients died. One in the lumbar region was cured. In the remainder the region involved is not noted. No period seems thus far better than another for operation, as cures have resulted at five months and seven years, while no improvement has been found at six months and at three years.

Although the statistics of the cervical cases are slightly less favorable than those of the other regions, he is of the opinion that the danger to life without operation is also greater, and recommends that whenever there are any indications that the inflammatory conditions are extending toward this portion of the cord an operation should be undertaken at once.

The Radical Cure of Femoral Hernia.—Salzer (*Ctrlbl. f. Chir.*, Aug. 20, 1892) first removes the sac and then closes the external orifice by a flap formed from the fascia covering the pectineus muscle, turned upward and sutured to the middle third of Poupart's ligament. In this manner the sæptum crurale is replaced by a tough, resistant layer of fibrous tissue. The thickness of the pectineal fascia varies, but is most likely to be strong enough in old persons and in those who have worn a truss for femoral hernia for a long time.

Empyema.—In a discussion on the surgery of the thorax at the sixtieth annual meeting of the British Medical Association Mr. Godlee made the following points in regard to empyema (*Brit. Med. Jour.*, Oct. 15, 1892): The site of election for incision in a complete empyema he considers to be opposite the ninth rib, just outside the angle of the scapula, because, firstly, it is just above the level at which the diaphragm becomes adherent to the ribs when it has been drawn up as much as possible; secondly, it is one of the most dependent parts of the pleural cavity when the patient is standing up, and always the most dependent when he is lying on his back; thirdly, it is the most advantageous position practically for the opening. A piece of the rib should be removed as a routine practice with very few exceptions, because, firstly, it admits of the best possible exploration; secondly, it permits of the evacuation of masses of lymph; thirdly, it greatly obviates the difficulty of retaining or reintroducing the tube. Where there may be danger from the anæsthetic on account of distention of the pleura, a certain amount of the fluid may be drawn off with an aspirator, or the intercostal space may be incised before the rib is removed. In a very putrid case there may be danger of the tube causing ulceration of the intercostal artery, so in such cases it is best to divide the artery and tie it in two places. A rubber drainage-tube should be used, as large as the little finger for an adult, smaller for a child. It should be just long enough to enter the chest cavity, and have not more than one or, at most, two holes close to the end. It should never be shortened, but, when the proper time comes, removed altogether. The time of removal of the tube depends on the amount and character of the discharge, so no definite period can be stated. But in young children, if the case be uncomplicated, it can usually be dispensed with in about ten days, in adults in three weeks, but it must often be retained much longer, and it is best to err, if at all, on the safe side. If the discharge be serous and small, sometimes even if purulent, closure of the cavity may often be obtained by removing the tube and tapping the cavity with a railroad catheter, at first daily, then at two or three or more days' interval. If, after three or four days, only a drachm or two of clear serum escapes, this may be stopped; but if the discharge remains or becomes purulent, it is usually best to put back the tube.

In operating, the patient should not be put far over on his sound side; he should be brought over the edge of the table, and the operator should, if necessary, sit down. If the chest is very full, the patient may be placed semiprone on the diseased side. He considers chloroform to be the best anæsthetic usually, and that ether is especially contraindicated where there is much expectoration or the chest is very full.

Double empyema is not, perhaps, so very rare. Some are septic, and then, fortunately, they are likely to be localized. Some are probably tuberculous. A septic case may be very acute, so that it may be almost essential to operate on both sides, either at the same time or within a short period of one another. But usually it is best not to open both sides at the same time, but to wait until the patient is accustomed to the modification of his thoracic arrangements induced by the first operation before attempting the other.

Tuberculous empyema and pyopneumothorax should be dealt with very cautiously, especially in adults. If the disease is quiet, he believes that a free incision is likely to accelerate the patient's death. He prefers to wash out the cavity in the following manner: Into the anterior part of the chest a needle is inserted connected with an India-rubber tube passing into some sterilized or antiseptic water; another needle, connected with the aspirator, is then inserted into the most dependent part of the chest and the pus is drawn off. After a while the fluid flows in to replace the pus and finally will flow clear into the aspirator. The anterior needle is then taken out and most of the liquid may be withdrawn from the cavity.

All empyemata do not end in recovery. Great care should be taken in washing out the cavity after operation when this is necessary, as this sometimes causes death even in chronic cases. Cerebral abscess is a not uncommon complication. Shock and hæmorrhage from the granulations lining the cavity are sources of danger. Secondary hæmorrhage may occur. Amyloid degeneration, acute nephritis, and heart failure may carry off the patient, but most cases do well.

Cancer of the Breast.—Cheyne (*Lancet*, Aug. 13, 1892) insists that in all cases there should be free removal of the skin, especially over the tumor—very free indeed if the skin is actually the seat of disease; complete removal of the breast, bearing in mind its great extent; removal of the pectoral fascia coextensive with the breast and right on to the sternum along with a thin layer of the muscle behind the tumor and the main part of the breast; removal of the fascia over the serratus magnus in the axillary region, and of all glands and fat from the axilla by a clean dissection; if the tumor is adherent to the pectoralis, removal of large strips of that muscle. It should always be borne in mind that the object of the operation is not simply to remove the tumor, but to rid the patient of her disease, and that can only be done by removing, as far as possible, all of the probable seats of recurrence.

The Treatment of Inoperable Malignant Neoplasms with Bichloride of Mercury in Oil.—Lees (*Lancet*, Oct. 15, 1892) reports two cases of carcinoma and one of sarcoma into which he made repeated injections of twenty minims of a 1-to-2,000 solution of bichloride of mercury in olive oil. In the case of sarcoma the shrinkage of the tumor was marked for three or four days, when it ceased. The patient was not seen then for several days, when a 1-to-1,000 solution was injected. Great swelling and acute inflammation resulted. In the carcinoma cases twenty minims of the 1-to 2,000 solution were injected twice a week for three weeks "with the greatest success," but the writer fails to state the condition of the patients at the end of the third week, when they passed from under his observation.

Serous Cysts of the Cerebellum.—Regarding serous cysts of the cerebellum Williamson says (*Am. Jour. of the Med. Sci.*, August, 1892): Cysts of various kinds are found in the cerebellum, such as hydatid cysts, cysts due to the *Cysticercus cellulosæ*, cysts following hæmorrhage or softening, cystic tumors and, rarely, the so-called simple or serous cysts. A cerebellar cyst can be classed as simple or serous only when the history and pathological examination have failed to reveal any evidence of the other forms, and such classification is not justified until these other forms have been excluded by a careful and minute microscopical examination of every part of the cyst wall. He considers it probable that some of the recorded cases of simple cysts were cases of cystic tumors in which the cystic degeneration had been so marked that all the tumor growth had disappeared or only a minute portion remained which escaped detection. His reasons are that the history and symptoms have been those of cerebellar tumor; that cerebellar tumors are especially liable to undergo cystic degeneration; that simple serous cysts are very rare; that in many cases minute examination has revealed a very small mass of tumor growth at some part of the wall, which may be so minute as to measure only three thirty-seconds by three sixteenths of an inch in the wall of a cyst nearly as large as a pigeon's egg; and that if the cystic degeneration can be so marked as to have only a patch of this size, it is probable that in some cases the whole of the tumor may disappear and only a cyst remain.

Cystic degeneration is much more frequent in cerebellar tumors than in tumors elsewhere in the brain. Hence, in a given number of cases presenting symptoms of cerebellar tumor, the lesion in a considerable number—though, of course, in a minority—will be cystic: either a cystic tumor or a cyst in the walls of which only a small fragment of tumor or no new growth is present. Hitherto operations for removal of cerebellar tumors have been very unsuccessful. It is worth considering whether it might not be justifiable in some cases presenting these symptoms to trephine the skull, to puncture the cerebellum with a hypodermic needle, and, if fluid were obtained, to drain and treat as an abscess. This could only be thought of—after the failure of medical treatment—in cases in which a tubercular or syphilitic tumor was improbable, and preferably in cases in which there was some indication of the side affected. Trephining and puncture with a fine exploring needle, under strict antiseptic precautions, would not be a very formidable procedure, and, as the cases are otherwise hopeless, it does not seem very objectionable. In the majority of cases the growth would be solid, but with strict antisepsis probably no grave results would follow. In a minority of cases the lesion would be cystic, and then this procedure might be followed by good results.

The Surgical Treatment of Epilepsy.—Sachs, in an article on this subject by Gerster and himself in the November number of the *American Journal of the Medical Sciences*, declares himself to be firmly of the opinion that the application of the faradaic current to the dura will help to localize centers much more precisely than any of the customary rules, though possibly in cases of tumor or where the brain tissue has been seriously altered by disease there may not be as prompt a response to the current.

Regarding the results of the operations for epilepsy reported in this paper, not a single cure is alleged. In several of the cases there was a marked diminution of the attacks immediately after the operation, in some the improvement lasted a few months, but in every case the attacks finally recurred. The best result, in a case in which the condition was due to ear disease, was improvement lasting nine months, and a second operation was necessary in order to bring about this result. The quiet of hospital life and the care received by patients after operation undoubtedly contribute to the cessation of attacks.

The reason for the failure of operative procedures he considers to be probably the widespread changes throughout the brain which usually are present before epilepsy manifests itself, so that removal of the initial focus of disease from cases which have run a course of years will have little effect on the general sclerosis which has been established. Hence, considering the seriousness of epileptic disease and the slight danger attending the opening of the skull, he believes it to be the surgeon's duty, in every case in which there is the shadow of a doubt about the effect of a traumatic injury to the skull or brain, to trephine the skull and thus remove the cause of an epilepsy that would be apt to be developed.

Tapping the Lateral Ventricle.—Diller (*ibid.*) reports a case of tumor of the pons in which the lateral ventricle was tapped for the relief of intracranial pressure. The tapping was done with a trocar and cannula, and a drainage-tube was inserted and left for twenty four hours. The patient died thirty-six hours after the operation.

Amputation in Senile Gangrene.—Powers (*ibid.*) indorses the statement of Heidenhain that "so long as the gangrene be confined to one or two toes one may wait and abstain from other than general antiseptic treatment, with high position of the limb, allowing the part to be spontaneously thrown off. If the process extends, however, to the dorsum or sole of the foot, one should amputate above the condyles of the femur. Amputation below the knee is almost always followed by gangrene of the flaps and brings the patient in danger. High amputation is indicated, then, when the gangrene progresses, even though the patient be without fever."

Excision of the Ossicula in Chronic Aural Catarrh.—It is always well to bear in mind the possible danger attendant upon even the most trivial surgical operation, and the almost invariably good results reported after excision of the ossicula would tend to make us believe the danger very slight and the improvement almost marvelous. But that our prognosis as to the result of this operation should be guarded is shown by a case reported by Würdemann in the *Journal of the American Medical Association* for October 22d. The membrana tympani and malleus were removed from a man sixty years old under ether anæsthesia for chronic aural catarrh. The operation was clean, and, although several attempts were made to reach the incus with the incus hook, it was not obtained. The patient did not take ether well, became cyanotic at times, and vomited excessively after recovery. When he came to his senses he complained much of vertigo, and when his hearing was tested he was found to be totally deaf on the operated side. A careful study of the case renders plausible Würdemann's suggestion that a hæmorrhage into the labyrinth happened during the anæsthesia or during the excessive vomiting, and that the clot subsequently became organized.

The Surgery of the Gall-bladder.—Czerny presents an elaborate paper on this subject (*Deutsche med. Woch.*, No. 23, 1892) and offers the following conclusions: Gall stones require operation as soon as they cause frequently repeated or long-continued sickness. Empeyma of the gall-bladder requires operation; hydrops, if it causes much trouble. The typical operation for gall stones is incision, removal of the calculi, and suture of the gall-bladder, with drainage of the abdomen. Should the cystic duct be closed, the gall-bladder inflamed, or its contents greatly altered, a temporary biliary fistula should be made. Extirpation of the gall-bladder is indicated only in cases of severe inflammation or carcinoma. Should the ductus choledochus be closed, operation is indicated if the strength of the patient will permit. If the obstruction can not be removed, the formation of a fistula between the gall-bladder and the duodenum is recommended. The preferable incision is ⌋ shaped, the vertical portion in the linea alba, the horizontal part running to the right just below the umbilicus. The danger to life will probably be less than after similar operations on the urinary bladder.

Rupture of the Femoral Artery.—Zuckerkandl (*Wiener klin. Woch.*, Oct. 27, 1892) reports the following case: The patient was a man, twenty-four years of age, who had suffered from coxitis for seventeen years and appeared for operative treatment. During the first year of the disease a fistula had appeared on the inner side of the thigh and a contracture at the hip joint had become established; both conditions had since then remained stationary. When seen he was found to have right-sided coxitis; the right thigh was very greatly emaciated and fixed in a position of strong adduction, flexion, and inward rotation. In the adductor region, about the junction of the upper and middle thirds of the thigh, was the opening of a fistula which led in the direction of the hip joint. As a preliminary to an operation on the joint it was considered best to forcibly correct the bad position of the limb, and this was done under chloroform with comparative ease. A tumor then appeared in the subinguinal region and grew so rapidly that in a few seconds it was as large as a child's head. This was opened, a quantity of blood evacuated, and the femoral artery found to have been torn across just below Poupart's ligament. The femoral vein and crural nerve were uninjured. Both portions of the ruptured artery were ligated, collateral circulation was established, and the patient recovered.

The Pathogenesis of Hæmorrhoids.—Nannotti (*Riforma med.; Ctrlbl. f. Chir.*, No. 43, 1892) has observed a marked hypertrophy of both the circular and longitudinal muscular layers of the bowel in very many cases of both old and just commencing hæmorrhoids. This abnormal hypertrophy was particularly marked near the internal sphincter. He brings the constricting action into causative relation with the occurrence of hæmorrhoids in many cases, and recommends as the most rational treatment overstretching of the sphincter ani.

Miscellany.

Urethral Irritation.—At a meeting of the Philadelphia County Medical Society held on November 9th, Dr. Mary Putnam Jacobi, of New York, read a paper on this subject as follows:

The causes of vesical and urethral irritation in women are both numerous and diverse. Gynæcologists constantly refer to the irritation which accompanies uterine lesions—either inflammations or displacements. Dr. Howard A. Kelly has called attention to the tenesmus and frequent micturition which may be excited by lesions of the ureters, and such tenesmus may, for a certain time, be the most salient symptom of a renal calculus. On the other hand, the distinguished Philadelphian gynæcologist, Dr. William Goodell, has truly said that "a nervous bladder is one of the earliest symptoms of a nervous brain; for nervousness means a deficient control of the higher nerve centers over the lower ones; the vesical irritability indicates a lack of brain-control." The following case excellently illustrates this remark:

It was that of an unmarried woman, about twenty-five years old, of a highly nervous temperament. A year previous to consultation she had, together with a sister, opened an office for type-writing. The business responsibility was unfamiliar, the work often heavy, and the patient had become anxious, worried, and excited over it. She did not, however, complain but of one symptom—namely, a frequent vesical tenesmus, recurring night and day. The passage of urine was free, but preceded and followed by an unbearable distress, apparently situated in the neck of the bladder. The urine was entirely normal in every respect, free from albumin, sugar, oxalates, or other sediment, inorganic or organic. The urethra was normal, and the bladder could be explored by the sound without causing any pain. There was no uterine disease. I should add that there were no definite hysterical symptoms, unless the irritability of the bladder be reckoned as hysterical. The patient was entirely cured by local faradization—one electrode being placed over the lumbar spine, the other over the bladder. A few applications were first made at my office, and immediately followed by diminution in the irritability of the bladder, and in the tenesmus. Then the patient procured a faradaic battery for herself, and applied the current for about twenty minutes every night. Relief was speedily obtained, and a complete cure effected in a few weeks.

My recollection of the details of this case is incomplete, as it was observed by me a good many years ago, and I have not full notes. If the frequent and spasmodic contraction of the bladder be due to an overexcitation of the nerve centers of the lumbar spinal cord, and if this overexcitation be due to loss of cerebral inhibition, it is difficult to understand why the local application of the stimulating form of the electric current should have had so positively curative an effect. The explanation may be approximately referred to the general action of faradaic electricity on hysterical peripheric neuroses—action which may almost be called specific, since it is exerted with success in all three forms—namely, hysterical paralyses, hysterical cramps, and hysterical paræsthesias.

Another case was that of a markedly hysterical woman, aged fifty years, and who had passed the menopause, but who was subject to profound analgesia of the lower extremities, so that a pin could be plunged into the flesh and buried to its head without causing the least pain. This patient was subject occasionally to acute attacks of vesical irritability, associated with great general nervousness and depression of spirits. Such an attack was promptly dissipated by the injection into the bladder of two grains of cocaine dissolved in an ounce of water.

A third case was chiefly remarkable for the long duration of a single symptom, for the limited extent of its causal lesion, and for the final success of the treatment. The patient was a West Indian creole lady, between fifty and sixty years old, a widow, who had never had any children and had never suffered any uterine disease. She was remarkably short, had an old-standing lumbar scoliosis, and suffered often from the muscular pains of lithæmic indigestion. She consulted me for an annoying and constant sense of pressure at the neck of the bladder, or rather more externally, at the urethra, attended with a moderate frequency of micturition, but no alteration of the urine. Just before and after micturition the sense of pressure increased and became more painful. Fifteen years previous, to relieve this same symptom, the urethra had been forcibly dilated by Dr. Marion Sims, but the patient insisted that she had not been at all benefited by the operation.

No spasm and but little pain was caused by the introduction of the catheter; and dilatation of the urethra with an ordinary urethral speculum failed to reveal anything abnormal. I tried several plans of treatment upon the case, which were all quite unsuccessful, and the patient finally ceased attendance. About five years later, very much to my surprise, she returned with exactly the same complaint. On this occasion, thinking that this peculiar and limited morbid sensation might be a pure neurosis, I applied faradaic electricity by means of a double electrode inserted into the urethra and just within the bladder. This treatment at once greatly relieved the patient, and the relief persisted for twenty-four hours, when the distress returned. Repetition of the local electrization had the same effect, and the patient was so much more improved by this treatment than by any other which had been tried that she persisted in it for several weeks. By that time she considered herself very decidedly improved, but not yet well. I then had an endoscopic examination made, and it was found that the mucous membrane of the bladder immediately surrounding the urethral orifice was swollen into a ring. The surface of the ring was moderately reddened. It seemed as if this protruding localized hypertrophy of the vesical mucosa had formed during efforts at bladder expulsion made in former years against some obstruction—very possibly a spasmodic contraction of the neck of the bladder in consequence of a fissure. The faradaic electricity had relieved by determining retraction of the submucous cellular tissue. It seemed probable that the local application of a strong astringent would effect a more permanent shrinkage of the swollen mucosa. Accordingly, applications were made of solution of nitrate of silver—five grains to the ounce—by means of an instrument that permitted the application to be made exclusively to the affected locality. The result was immediately beneficial, and a few similar applications, made twice a week, succeeded in entirely curing this troublesome symptom, which had been annoying the patient for twenty years.

My fourth case seems to me of unusual interest, both on account of its medical history and of the physiological doctrine it illustrates. The patient is a woman of thirty-five years of age, who for many years had been overworked and underpaid in responsible business employments. Eight years ago her health began to fail, and in particular she began to suffer from two symptoms—severe spasmodic dysmenorrhœa and a distressing, burning sensation at the urethra. This was at first said to be constant, but inquiry showed that the patient suffered little from it while lying in bed, but intolerably if she attempted to walk, so that she soon became unable to walk but a block or two. She consulted a prominent gynæcologist, who treated her locally for three months, then advised her to enter the Woman's Hospital. She remained for some time in one service, and at length the surgeon declared he could do nothing more for her unless she would submit to the operation of an artificial vesico-vaginal fistula. Refusing this, she entered another service in the same hospital, and here Emmet's button-hole operation on the urethra was proposed and performed. The patient, however, did not benefit in the least from these various manipulations, but rather grew steadily worse. According to her statement, the most careful exploration was repeatedly made for any pelvic lesion adjacent to the bladder which could explain the persistent distress, but nothing definite was ever found.

After ten months' residence at the hospital the patient left it, rather worse than when she entered. She then went to England and consulted Dr. Keith, who, after a careful examination, advised her to desist from all further treatment. She followed this advice and attempted to resume work, but her strength continued to deteriorate, and she finally was compelled to give up her work again, and remained a wretched invalid.

When the patient consulted me she was a thin, pale, anæmic woman, quiet and rather slow of speech—rather unusually free from the excitability and mobility which so often characterize hysterical patients. Examination of her blood found seventy per cent. of hæmoglobin, and 1,960,000 blood-corpuscles to the cubic millimetre. There was a continuous venous hum at the jugular.

The patellar tendon reflexes were normal. The subjective symptoms were: A constant sense of fatigue, mental and physical, rendering all exertion impossible; this associated with a sense of mental confusion and imperfect memory; distress, rather than pain, in the back of the head; profuse sweating at night; tenderness on pressure at Charcot's point, but on the right side; the skin over the hypogastrium and thighs was moderately hyperæsthetic to the touch, and extremely so to faradaic electricity. There was a constant burning pain at the urethra, not at all aggravated by micturition, but greatly by walking. A distance of one or two blocks could be traversed with comparative ease, but then the burning pain became intense; a bearing-down sensation in hips and hypogastrium was added, and a heaviness extending down the thighs.

At menstruation the patient suffered intensely for several days, but during the premenstrual week she usually felt pretty well—at all events, much better than at any other time. This fact contrasted emphatically with the premenstrual pains which almost invariably characterize ovarian disease. Again, micturition was neither painful nor frequent, and was unaccompanied by tenesmus. A local examination found the uterus perfectly healthy; nothing abnormal discoverable in the pelvis except tenderness upon pressure in the region of the left ovary. The latter, however, was not sufficiently accessible to be exactly defined.

The urethra remained deformed by the partial failure of the union attempted after the button-hole operation. A catheter passed into the bladder caused no pain until it reached the neck of the bladder; then a spasm occurred, moderate in intensity, but causing great pain. The spasm was easily overcome, and within the bladder the instrument caused no pain. The urine was normal in every respect. The patient had discovered for herself that the ingestion of large quantities of hot water—increasing the quantity of urine—diminished somewhat the urethral paræsthesia. If for any reason the urine became scanty, the burning became intense. The negative result of the local examination was entirely in accordance with that of the repeated explorations which had already been made by distinguished surgeons. In view of it, and of all the circumstances of the case, I myself made the diagnosis of a severe cerebro-spinal neurasthenia, of which the urethral burning, the oophoralgia, and the dysmenorrhœa were concomitant symptoms. They were, so I argued, symptoms projected on the periphery from a brain so badly nourished as to be the prey of sensory hallucinations, generated in its lower visceral centers. The history of the case seems to indicate that local manipulation of the bladder tended to increase, rather than diminish, the subjective hyperæsthesia. The aggravation of the paræsthesia by walking, the relief afforded by recumbency, seemed to me to depend on the facile exhaustion of the centers of the lumbar cord, with their double relations to the innervation of locomotion and to that of the pelvic viscera. It did not, as evidently had been supposed, argue a coarse lesion of these viscera, which might be aggravated by pressure; rather a vaso-motor neurosis due to loss of spinal control when the lumbar-cord centers became exhausted.

In a very large number of cases cerebro-spinal neurasthenias with irritative symptoms depend upon lithæmia, or, more precisely, upon defect in the hepatic digestion of albuminous foods.

Reasoning most plausibly, though from too few experimental data, Haig has argued that many irritative or explosive symptoms in lithæmic cases depend on a saturation of the nervous tissues with uric acid; that the nerve explosions of migraine, and also of epilepsy, are correlated with a uric-acid wave, as uræmic eclampsia is believed to depend on the surcharge of the brain tissues with excrementitious substances.

Herter, of New York (*N. Y. Med. Journal*, Aug. 20, 27, Sept. 3, 1892), in a recent essay, calls attention to the numerous putrefactive products of nitrogenous foods which form in the intestine when digestion of such foods is imperfect. Estimating these putrefactive products by the ethereal sulphates which appear in the urine, Herter has studied their relation to epileptic attacks, and believes to have found some degree of correlation between the formation of such substances and the convulsive seizures, and at any rate an abnormal degree of intestinal putrefaction in epileptic neurotics. These recent researches tend to focus and accentuate the conviction which many observant physicians must have formed—that the irritative phenomena of neurasthenic conditions are probably traceable to the immediate action on nerve centers of toxic substances circulating in the blood.

It is known that the forms of neurasthenia which are characterized by mere simple debility are often wonderfully benefited by an excessive meat diet. This determines an excess of nitrogenous metabolism which, when well borne, is a most powerful stimulant to the nutritive processes of nerve centers. In irritative neurasthenias, however, the milk diet is often far better tolerated, and the explanation is probably to be found in the fact that on such diet the various perversions of nitrogenous metabolism are reduced to a minimum.

In the case in question I resolved to experiment with both diets, and began with the meat, intending to administer a pound and a half a day. However, in the first two days the patient only succeeded in taking three quarters of a pound a day, and on the third came to me in a very curious condition. Her habitual air of quiet depression had changed to great restlessness. Her respirations were 28, somewhat panting; her pulse 120, feeble, the sphygmograph showing a marked respiratory curve. Her mouth was parched, she felt feverish, but, though she had continued to drink a great deal of hot water, the urine had become scanty and high-colored, and the urethral burning was intense. She had been unable to sleep the previous night, was nauseated, and had contracted an intense repugnance to even the thought of animal food. In spite of the restlessness, the patient was drowsy. This condition, produced as promptly and distinctly as if in a laboratory experiment, suggested several explanations, and, unfortunately, there was no opportunity to analyze the urine in such a way as might aid in the choice between them. Thus there was the possibility of a uric-acid saturation of the nerve centers—an improbable theory—as the symptoms were quite different from those habitually associated with uric-acid excess or retention.

The drowsiness especially suggested that peptones, insufficiently modified in the liver, had passed almost unchanged into the circulation, as in Lauder Brunton's experiment.

From a third point of view, the imperfect digestion of the meat had resulted in abnormal putrefaction in the intestine with generation of toxic substances, which, passing into the blood, had occasioned the entire cortége of pseudo-febrile symptoms. This, on the whole, seemed the most plausible hypothesis.

The most important practical fact was the great aggravation of the urethral burning or paræsthesia under these circumstances, which certainly tended to confirm my hypothesis of its origin in constitutional conditions. The diet was changed to one exclusively of milk, three quarts a day. Two days later the patient returned, seeming a different person. The restlessness, hurried respiration, and nausea were gone; the pulse dropped to 84, the urethral burning and ovaralgia disappeared, the patient feeling for the time quite comfortable.

The case is still under observation and the symptoms oscillate, although with, on the whole, a steady improvement in the condition of the patient. She is kept in bed a greater part of the day, on a diet of milk, baked apples, and a little rice; takes a steam leg-bath followed by cold sponging, minute doses of iron with maltine. Sleep is greatly improved, the mental depression lessened, the urethral burning reduced to a minimum, only occasionally aggravated; such an aggravation occurred on a cold, damp day, but on the next, a bright and clear day, the patient again felt a great deal better. Nevertheless, she was suffering rather more than usual from the occipital pain. This latter was entirely dissipated by an application of static electricity below the occiput. The same application was then made along the spinal column, and although for two minutes the patient was greatly fatigued, she then experienced an agreeable warm glow and sensation of prickling all over her body; and coincidently what degree of urethral distress and ovaralgia was for the moment persisting entirely disappeared.

Throughout that day and the next these two symptoms remained entirely absent, but the occipital headache returned on the second day, to again disappear on the third.

The absence of local pelvic lesions in this case might seem to render it inappropriate for presentation at this meeting. But I have thought it interesting because the existence of local symptoms seems to have been sufficient to convince so many distinguished physicians that such lesions must exist, even though they failed to discover them. Yet it is a general law for sensory symptoms that any one may be due to one of three conditions: There may be a structural lesion at the point to which the sensation is referred. There may be a lesion at a distant or adjacent point from which nerve irritation is irradiated to the point of sensation. Finally, there may be a functional disturbance of the brain nowise representing the part, which disturbance is expressed by the morbid sensation referred to the periphery. On this account there should not have been any difficulty in regarding this urethral symptom as an expression of central nervous disturbance from the moment that careful examination had failed to detect any local lesion of the bladder, urethra, or adjacent pelvic organs. Yet the presumption in regard to such lesions was so great that when they were not found they were almost invented; and when prolonged surgical treatment only left the patient in a worse condition than at first, she was given up as incurable, because her parts refused to adjust themselves to a preconceived and erroneous theory.

The S. D. Gross Professorship of Pathological Anatomy Fund.—The committee appointed by the general committee to audit the account of Dr. Richard J. Dunglison, treasurer of the S. D. Gross Professorship Fund of the Alumni Association of Jefferson Medical College, respectfully report that after an examination of such account they find that there were sixty contributors to the fund, the total amount contributed being $3,499.10. In accordance with a resolution of the general committee, these contributions have all been returned to the donors, and the treasurer has presented a voucher for each amount thus refunded. A great portion of the whole amount has been retained undistributed until recently so that the interest on the amount might so accumulate as to enable the committee to refund to each subscriber the full amount of his contribution without any deduction for expenses of publication of circulars, postage, etc., which were necessarily heavy, from the widespread diffusion given the objects of the fund. The names and addresses of the subscribers and the amounts contributed by them are as follows:

Dr. S. W. Gross, Philadelphia, Pa.	$1,000.00
Dr. J. Marion Sims, New York, N. Y.	500.00

W. L. Conygham, Wilkesbarre, Pa	$200.00
Dr. Hunter McGuire, Richmond, Va	125.00
Dr. Joseph Hearn, Philadelphia, Pa	100.00
Dr. Albert H. Smith, Philadelphia, Pa	100.00
Dr. N. Bozeman, New York, N. Y	100.00
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[Signed.] J. EWING MEARS, M. D.,
WILLIAM B. ATKINSON, M. D., } *Auditing Committee.*

The New York Academy of Medicine.—The programme for the meeting of Thursday evening, the 1st inst., included a paper on The Diagnosis and Treatment of Cholera at Swinburne Island, by Dr. John M. Byron; one entitled Personal Experience with Cholera during the late Epidemic at St. Peterburg and Hamburg, by Dr. Elmer Lee; and one on Disinfection during the Cholera in Hamburg and in Berlin, by Dr. L. Seibert.

At the next meeting of the Section in Pædiatrics, on Thursday evening, the 8th inst, Dr. L. E. Holt will present a case of scurvy and Dr. J. Lewis Smith one of leucæmia. Discussions on Pott's disease and on hip-joint disease will follow. The names announced in connection with these discussions are those of Dr. Lewis A. Sayre, Dr. Royal Whitman, and Dr. Leroy M. Yale.

At the next meeting of the Section in Genito-urinary Surgery, on Thursday evening, the 8th inst., Dr. Manley will present two cases of perineal fistula healed by grattage, Dr. M. Manges will present a case of cystinuria, and Dr. Manges will open a discussion on cylindroids, or so-called mucous casts, in the urine.

At the next meeting of the Section in General Surgery, on Monday evening, the 12th inst., Dr. Royal Whitman will read a paper entitled Observations on Fracture of the Neck of the Femur in Childhood (the discussion to be opened by Dr. Lewis A. Sayre), Dr. W. B. Coley will read one on The Treatment of Malignant Tumors by Repeated Inoculations of Erysipelas, with a Report of Ten Cases (Dr. R. F. Weir, Dr. W. T. Bull, and Dr. E. Eliot, Jr., to take part in the discussion), and Dr. Whitman and Dr. Coley will show patients whose cases illustrate the subjects of their papers.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

THE NEW YORK MEDICAL JOURNAL, DECEMBER 10, 1892.

Original Communications.

DISINFECTION DURING CHOLERA IN BERLIN AND HAMBURG.

*A REPORT.**

BY A. SEIBERT, M. D.

"PREPARE for war in time of peace." This advice of Moltke was quoted by Director H. Merke, of the Moabit City Hospital in Berlin, on September 5th, when the author of this paper was inspecting the methods of disinfection during cholera, as representative of the New York Health Department. To promote the interest for this "preparation for war" against endemic and epidemic diseases, I shall supplement my report made to Dr. Cyrus Edson by the following remarks. Some of these will bring well-known facts, yet must be referred to as parts of the whole subject. On the whole, efficient house disinfection is quite unfamiliar to the general practitioner, here as well as abroad—so much so that courses of instruction for physicians have been arranged at the Berlin City Hospital since October last, where disinfection of dwellings is theoretically taught and practically demonstrated.

In the following I shall relate what I learned myself during my stay at Berlin and Hamburg. To avoid repetition, the methods will be spoken of collectively.

The object of disinfection is to destroy pathogenic bacteria. It is proper to assume every surface coming directly or indirectly in contact with a patient suffering from an infectious (contagious) disease to be infected. Upon this assumption modern disinfection is based.

I. DISINFECTION AT HOME.

Before a physician arrives at the bedside of a patient the *privy cesspools* belonging to the house may have been infected. These are disinfected by milk of lime, made of one part of calcium oxide and four parts of water. A sufficient quantity of this mixture is added to the contents of the privy vault to constitute at least two per cent. Later on about one to two quarts of the milk of lime are added daily, or about one per cent. of the daily additions to the privy contents. This milk of lime must be made of caustic lime containing not more than two per cent. of impurities. Stirring of the contents is not necessary.

Fœces, vomited matter, sputa, saliva, and *urine* are mixed with the same quantity of the milk of lime, stirred well, and, after being mixed for thirty minutes, thrown into the privy. Fæces and vomited material which may have dropped upon the floor are covered with a sufficient quantity of milk of lime and then washed up.

Fluid remnants of *food* are treated like fæces. Solid food is burned.

Dishes, spoons, knives, forks, etc., are submerged in a dish-pan containing a five-per-cent. solution of carbolic acid and so removed from the room, later on to be sterilized by boiling or steaming.

Towels, handkerchiefs, shirts, stockings, underwear, pillow-shams, bed-sheets, and *other cloths* must be frequently changed during the illness, the soiled articles being placed in a wash-boiler in the room and there submerged in a five-per-cent. carbolic or a 1-to-500 sublimate solution for six hours, to be boiled later on.

Persons must never leave the sick-room unless thoroughly disinfected by twenty parts of milk of lime and one part of carbolic, or a five-per-cent. solution of carbolic and green soap. The linen overalls worn in the room are left there. Shoes are washed with a five-per-cent. carbolic solution, not to forget the soles. No one is to enter or leave the sick-room unless absolutely necessary. Every person and every article must be disinfected each time before leaving the room.

The *patient's skin* is frequently washed with a two-per-cent. carbolic solution and green soap, especially where fæcal matter may adhere. In case of recovery, the patient is first disinfected (hairy regions particularly), then bathed, and then transferred to an adjoining room and put into clean clothes. In case of death, the corpse is wrapped in a sheet dipped into a solution of the bichloride (1 to 500), so as to cover all parts well. The body is not washed, but placed in the coffin directly. After the removal of the patient the *sick-room* and such apartments as are infected are now disinfected. The method to be described now I saw demonstrated at the homes of cholera patients that had been removed to the hospitals. A squad of four trained disinfectors arrives shortly after the removal of the patient. Their overall uniforms and necessary implements are taken to a house on a cart. They first select a room adjoining the infected apartment, where they don their uniforms, consisting of long linen gowns closed tightly at the neck and wrists, long linen boots with wooden soles, a linen cap with cape covering head, neck, and shoulders, and a moist, thin, oval sponge covering mouth and nose and held by a string tied back of the head. The street clothes of the men are placed in dry bags saturated by a five-per-cent. carbolic solution and kept there until their work is finished. With their own pails hot water is now brought from the kitchen and then the infected room is entered. Here all bedding, mattresses, clothing, curtains, wraps, carpet, drapery, and such upholstered furniture as can be removed are first covered with carbolized bags and covers and then taken down stairs and there placed in one of the "unclean" vans (air-tight, metal-covered large wagons), which removes these articles to one of the disinfecting stations.

The four disinfectors remain in the room and now proceed to empty their satchels. These satchels are of iron-tin, are shaped like the ordinary traveling-bag, and each one contains forty-eight different articles, from a folding iron stepladder with rubber tips, brushes of all sizes and shapes, knives for cutting bread, scrapers, cloths, chamois leather, tin bottles containing carbolic acid, and measuring cups, down to hammer, screwdriver, nails, putty, and gimlet. A five-per-cent. and a two-per-cent. carbolic-acid solution and milk of lime are prepared. All pictures and mirrors are now removed, with all the other remaining furniture, to the center of the room. The *ceiling* is then swept clean by a long-haired dry broom. Now each man brings forth a large oval-shaped loaf of bread from the inexhaustible depth of his satchel and with a large-bladed knife proceeds to cut large pieces about two inches in thickness. The crust being removed so as to fit the piece in the palm of the hand, each man now mounts his stepladder, and, beginning in the left upper corner of his wall, now rubs down over its surface in long, even strokes, taking care that the evenly cut surface of the bread (which must be exactly twenty-four hours old) brushes down every bit of dust that may adhere to the wall. One can easily see the line of demarcation between the clean and dirty portion when watching this work. After a certain amount of dust has mingled with the uppermost layer of bread, this latter is cut off and the work proceeds with the thinned-down bread, and this is repeated as often as the size of the bread will permit. After finishing the walls, the crumbs of bread are carefully gathered from the floor into a tin box, later on taken to the station and burned there. All papered and painted walls are cleaned with bread, and then gently brushed with long-haired brushes dipped in a two-per-cent. solution of carbolic acid. Whitewashed walls are thoroughly washed with a five-per-cent. carbolic-acid solution or milk of lime.

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* Read before the New York Academy of Medicine, December 1, 1892.

Wooden furniture, picture and window frames, doors, etc., are now disinfected. Polished and carved surfaces are washed with soft cloths dipped in a two-per-cent. carbolic-acid solution and immediately rubbed dry. Other wood is washed twice and then dried. Visible spots are removed first with green soap.

Pictures not under glass are rubbed off dry; oil paintings are washed with a two-per-cent. carbolic-acid solution and rubbed dry.

Metal surfaces, glass, porcelain goods, etc., are treated in the same manner.

Upholstered furniture is carefully brushed off with a long-haired brush dipped in a five-per-cent. carbolic-acid solution. All leather and fur goods are treated likewise.

Children's toys are burned or removed to the station for steaming.

The floor of the room is freely scrubbed with hot water and green soap, and then again with a five-per-cent. solution of carbolic acid, and allowed to dry. Parquet flooring is cleaned with a two-per-cent. carbolic-acid solution and immediately rubbed dry with soft cloths. After finishing the floor, pictures and furniture are replaced.

All implements used in disinfecting are now cleaned with a five-per-cent. carbolic-acid solution, replaced in the satchels, and then steamed at the station. The overalls of the men are brushed with a brush moistened in a two-per-cent. carbolic-acid solution, replaced in the carbolized bags, and later on steamed at the station. Hands, faces, beards, scalp, and in particular the finger nails, of the workmen are cleaned with plenty of green soap and water. The men then don their street clothes and proceed to the station either on foot or by special wagon.

II. Disinfection at Stations.

All articles brought to the disinfecting station by the "unclean" vans are taken directly to the so-called unclean side of the building. The latter is of brick and has a very thick stone partition running through the center, which contains three large steam ovens, each about eight feet high, five and a half feet wide, and ten feet deep. These ovens can be closed air-tight, have pipes for dry and moist hot air, thermometers, regulators, and all other modern appliances of a sterilizing apparatus. Large iron racks fitting in each oven can be rolled out and in upon stationary rails. These racks are so loaded with the articles to be disinfected as to allow the steam to pass around each one. This loading is done according to certain strict rules—for instance, carpet is rolled, not folded, etc. One man can roll the full rack into the oven and close the door. Dry heat is now turned on for ten minutes, so as to bring the temperature to above 212° F. before turning on the steam. Then steam passes in the oven under pressure of one tenth of an atmosphere for fifty minutes, without losing any of its moisture, as no cooling off takes place. Dry heat again takes the place of steam for another five minutes, and then an electric-bell signal from the unclean to the clean side of the wall announces that the oven is ready for evacuation. The oven is then opened on the clean side and the articles are removed perfectly dry and unspoiled. They may be left at the station warerooms until the home of the patient is disinfected, where they are taken by clean vans that never carry infected articles.

Four ovens of this size can sterilize the clothes of about five hundred new cholera patients in a day, the attendants working from 7 A. M. to 6 P. M. All the hospitals in Berlin have sterilizing apparatus of this kind of their own. The city hospital at Moabit has four large ovens. The apparatus I saw in Hamburg were small and old, some only arranged for dry heat. Berlin has two large municipal disinfecting stations, each with three large ovens, and will soon have four stations.

The disinfectors are well-trained men. During the last two years quite a number of thoughtful municipalities in Germany have sent squads of men to Berlin at a time for instruction in this work. They are trained for weeks. The work of the disinfectors is controlled by foremen. All are specially taught to be polite to the public. The expense of disinfecting is paid in full by the rich, partly by the working classes, the city paying for the poor. This house disinfection has become very popular in Berlin within the last five years. The first municipal station has been in operation since 1886. House disinfection was introduced in 1887 on the above plan, and since the 24th of July, 1890, is obligatory in all cases of cholera, variola, remittens, typhus, diphtheria, scarlatina, and occasionally dysentery and typhoid. House disinfection was performed by new men in Hamburg, the system being shaped after the Berlin methods. In Berlin this work has been very successful this fall, as no second case of cholera developed from the numerous cases brought in from Hamburg. House disinfection in Hamburg can not be compared as to its result, as the chief source of infection was located in the water supply.

III. Disinfection in Hospitals.

For the sake of completeness I will here mention the rules for disinfection given to me by Professor Rumpf, director of the Hamburg city hospitals, during my visit in that city :

1. Large barrels (wooden or metal) are placed into or before each ward. They contain one of the following antiseptic solutions in sufficient quantity to cover articles thrown therein : two-per-cent. carbolic acid, 1-to-1,000 sublimate, one-per-cent. lysol.

2. All bedding and clothing of patients used are submerged into one of these solutions for at least four hours.

3. From here the articles are removed to the disinfecting apparatus in a bag soaked in sublimate solution.

4. Useless articles taken from these bags are burned.

5. Articles soiled by fæcal and vomited material are treated as described in paragraphs three and four. (Remark : In Berlin fæces are first mixed with milk of lime, then boiled, and then removed.)

6. Emptied bedsteads are washed before renewed use with a one-per-cent. solution of lysol.

7. Floors (in the Eppendorf and Moabit Hospitals made of "terrazo," an Italian marble mixture with glassy surface) are washed up with the above solutions.

8. The patients' clothing is wrapped in a cloth saturated in sublimate solution and taken to the sterilizing oven.

9. No food must remain in the wards. Remnants of food are burned or buried after thorough disinfection.

10. Attendants must carefully disinfect their hands before leaving a ward.

11. Nurses are strictly forbidden to eat or drink in the wards. Nurses dine in separate dining-rooms. Hands must be carefully disinfected before going to meals. All parts of the body or clothing coming in direct or indirect contact with patients must be disinfected by sublimate or lysol. Nurses' attention is specially directed to the fact that the mouth and the oral cavity must remain free from infectious material.

12. Visitors are not allowed in the wards.

13. After death the corpse is wrapped in a sublimated cloth and removed to the anatomy.

14. The necropsy is made soon after death. The body is placed in the coffin in the sublimated sheet.

15. Relatives are not allowed to see the corpse.

16. Worthless articles (straw, etc.) are burned.

17. *The use of unboiled water for drinking or washing purposes is strictly prohibited.*

Remarks.—I had all opportunities to see that these rules were strictly obeyed, and, although I counted over twelve hundred cholera patients in their beds in over forty pavilions on one day, I saw nothing but the greatest order, cleanliness, and all signs of regular, quiet work. At the Moabit Hospital in Berlin milk of lime, five-per-cent. solutions of carbolic acid, and green soap are preferred to sublimate and lysol.

IV. Disinfection at Quarantine.

Professor Robert Koch was kind enough to dictate to me the following opinions regarding this subject in his laboratory in the Hygienic Institute in Berlin :

1. All immigration from infected countries should be prohibited until cholera is extinct. It can not be foretold whether cholera will appear in the same localities the following year or not, nor is it known how long cholera germs will retain their vitality in filthy clothing or rags, and therefore prohibition of immigration should be enforced until all possibilities of cholera invasion can be excluded.

The German Government was advised by Robert Koch, at the meeting of a commission appointed in the spring of this year, to prohibit all Russian emigrants from passing over German territory. This advice was not heeded.

2. If immigration is not prohibited, then all clothes, baggage, and the persons of such immigrants must be disinfected at quarantine. A quarantine (against cholera) where all articles are not sterilized by steam in such manner as to reach every inch of surface is absurd. Comma bacilli may outlive twenty-four days as well as twenty-four hours under favorable circumstances. Russian emigrants brought the clothing of recent cholera patients to Hamburg. In the barracks of the Hamburg Packet Company they unpacked some of their bundles during their short stay there, and so infected their hands and the water of the river Elbe. None of these immigrants were noticeably sick in Hamburg or *en route* from the Russian border, as they were under constant supervision and not allowed to leave the trains or go to lodging-houses in Hamburg during the three months preceding the outbreak of the epidemic there. These arrangements made by the authorities and the Hamburg Steamship Company were very good so far as they went, but the "cardinal mistake" (Koch's own words) of omitting to disinfect the baggage of the Russians at Hamburg resulted in that terrible calamity. Worthless disinfection (by sulphur fumigations, washing the outside of trunks, etc.) is worse than useless, for it is dangerous in producing a treacherous feeling of safety.

Remarks.—To thoroughly sterilize the baggage and clothing of five hundred immigrants daily would absorb the work of sixteen large sterilizing ovens as described above, according to the figures given me by the Berlin experts, in particular that of Director Merke, the superintendent of municipal disinfection there, not to speak of bathing, scrubbing, and disinfecting the persons of the immigrants—men, women, and children.

3. Infected ships should be turned back or evacuated immediately after their arrival, the sick taken to quarantine hospitals, and the other passengers, separated as to classes, held in quarters for observation. After careful disinfection (which ought to be performed soon) of baggage and persons, the well passengers should be held in quarantine at least three weeks after the last case has developed among them. Immigrants arriving on ships having no cholera on board may be landed after thorough disinfection of their baggage and persons, as described above.

4. So far no case is known where cabin passengers have transmitted the plague from one locality to another.

5. Mail and merchandise have never been known to transmit cholera.

6. The greatest danger for a community lies in the possibility of the water supply becoming infected. The fæces of one cholera patient may do this in warm weather. Mild cases of cholera can not be recognized without bacteriological test, and are the most dangerous in this respect. No amount of cleanliness will prevent an epidemic if the water supply is infected, for the boiling of *all* water used can be done strictly only in hospitals or such institutions where trained attendants do the work. The danger arising from single cases appearing in a city if brought in from outside is small, provided house disinfection is resorted to, as the example of Berlin has demonstrated.

Remarks.—The epidemic in Hamburg first started among longshoremen working along the upper part of the river. The houses these men lived in were new and in a far better hygienic condition than those of the older parts of the city, and yet the number of cases and the mortality were no better than in the poorest quarters (Wolter, *Berlin. klin. Woch.*, No. 43, p. 1094). To enforce the boiling of all the water used is certainly much more difficult than to attempt teaching all mothers to sterilize the milk for their young children in summer. Those who have practical experience among the lower and lowest classes will understand this difficulty.

Before closing, I feel it my duty to make the following remarks: Criticism of the severest kind has been passed upon the medical men and authorities in Hamburg, here and abroad. To this I must say that (1) nothing has been concealed in Hamburg. The first case of cholera was diagnosticated on the 18th, or, strictly speaking, on the 20th of August. Rumpf and Koch are responsible for this statement. I for one, after careful inspection and consideration, am more inclined to believe these men than the reporters of the secular press. The numerous cases of cholera morbus all over Germany during the unusual spell of hot weather preceding the outbreak in Hamburg gave rise to these absurd stories. (2) Hamburg has been described as a city "where dirt reigns king, to whom all pay homage" (*Medical Brief*, October, 1892). I have been in Hamburg six times during the last twenty-three years. I have been there for weeks at a time, passed through its finest streets and its smallest alleys, and have been in the houses of well-to-do and of poor people, and I must say that Hamburg is one of the cleanest cities I know of, and its poorest inhabitants will strike the eye of every New Yorker on account of their patched but clean clothes. As for streets, I have never seen one near as dirty as Third Avenue, not to speak of Ludlow and Hester Streets; and as to the interior of tenement-houses we had better not attempt comparison. It has always seemed to me a cowardly act to strike a man when he is down, and certainly much of this has been done to poor Hamburg, and in a very one-sided way too, when we now read in the *Gazette hebdomadaire*, No. 43, that over one thousand persons died from the cholera in France from the 4th of April to the 1st of August—three weeks before the outbreak in Hamburg—that the first case was brought to Havre from Paris on the 5th of July, and that of the first fifty cases in Havre forty-eight ended fatally, and yet the French authorities denied the existence of Asiatic cholera. Where is the fair-minded criticism here that we like to boast of?

In conclusion, I take pleasure in saying that the greatest possible courtesy, assistance, and frankness were shown to me by our legation in Berlin and by the police, municipal, and hospital authorities in Berlin and Hamburg, during my stay there, and that I am under special obligations to Professor Robert Koch and his son-in-law, Dr. Pfeiffer.

137 East Nineteenth Street.

SOME PATHOLOGICAL CONDITIONS OF THE UPPER AIR PASSAGES COINCIDENT WITH ATTACKS OF "LA GRIPPE."*

By S. HARTWELL CHAPMAN, M. D.

During an epidemic of the disease popularly called "the grip," extending over a period of five months, beginning with the early days of November, 1891, it was my pleasure to observe certain secondary affections of the upper air passages coincident with it.

From a record of a large number of cases I have selected sixteen, which are of more than ordinary interest to me, since they had previously been under observation and treatment for other diseases for periods ranging from seven years to six months. They may roughly be divided as follows:

Eight cases of spinal disease, one case of diabetes insipidus, four cases of renal disease, three cases of rheumatic gout. The onset of the disease was quite similar in all these cases. Headache, nausea, anorexia, flying pains, exhaustion progressing to extreme malaise, fever moderate, pulse either considerably accelerated or greatly retarded, mild delirium, pain and stiffness in the back.

Permit me to call your attention to the fact of the close similarity between these symptoms of *la grippe* and the symptoms of the milder forms of epidemic cerebro-spinal meningitis called cerebro-spinal meningitis abortiva.

Upon hearing a description of the eight cases of spinal disease you will, perhaps, agree with me that the epidemic of *la grippe* is closely allied to the other and severer form of disease. In a description of the cases which follows I will endeavor to give only the salient points in order to consume as little of your valuable time as possible.

The three cases of rheumatic gout were as follows:

Sex.—One female, two males.

Ages.—Fifty-two, sixty-five, sixty-seven.

Position.—Affluent.

Condition.—Enlarged joints, muscular stiffness, uric-acid diathesis. In one case, chronic bronchitis with dilated heart. In two cases, mitral stenosis. Under observation about six months.

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* Read before the American Laryngological Association at its fourteenth annual congress.

Coincident Affections of the Upper Air Passages.—In one case, laryngitis crouposa complicated with broncho-pneumonia. In two cases, aphthæ of mouth and pharynx extending to the brim of the larynx.

Duration of the Disease.—In the latter cases the aphthous inflammation entirely disappeared in eight days. In the former, the pneumonia confined the patient to her bed for six weeks, and has left the lungs permanently diseased.

The phenomena attending the laryngitis were the following: On the second day, the patient being able to speak only in a hoarse whisper and complaining of some constriction about the throat, a laryngeal examination revealed an intensely congested condition of the cords and ventricles. Near the center of the left ventricle was seen a grayish-colored slightly raised oval spot, which at first sight had all the appearance of a diphtheritic membrane. From day to day this spot increased in size and thickness until the entire ventricle was covered, and the mass overhung the rima glottidis so that the left cord was concealed and only the attachment, the base of the right, could be seen.

On the fifth day the entire mass came away. This mass was half an inch long by three eighths in diameter; ovoid in shape and composed of dense fibrinous tissue.

The laryngeal congestion rapidly declined after the expulsion of the mass.

The four cases of renal disease were the following:

Sex.—One female, aged thirty-seven; three males, aged forty-three, forty-seven, and fifty-nine. All four patients in moderate worldly circumstances.

Condition (previous to the attack of *la grippe*).—In the female, analysis of urine gave specific gravity 1·012; albumin, large quantity. Blood cells, cells from kidney, granular casts. Secondary cardiac dilatation with insufficiency of the aortic and mitral valves. Under observation and treatment five years, with gradual intensifying of all the symptoms.

Coincident Affections.—Sanguineo-purulent naso-pharyngeal inflammation, combined with acute amygdalitis and sympathetic enlargement of cervical glands. The swelling of the tonsils became so great as to threaten suffocation, but was relieved by free slashing with a bistoury. The three male renal cases were cases of hyaline degeneration. Under observation a little more than a year. Specific gravity of the urine varied from 1·010 to 1·013, with hyaline casts plainly observable in every specimen examined. In two of these cases the accompanying affection was purulent naso-pharyngeal inflammation, with free but not dangerous hæmorrhage.

In the third case was seen the second laryngitis crouposa. The description previously given answers equally well for this case, the mass being, however, not so large or so dense. The duration of the naso-pharyngeal inflammation was about two months; of the laryngitis, only four days.

Case of Diabetes Insipidus.—Sex, female. Age, thirty-nine. Position, affluent. Mother of four children. Under observation two years.

Condition Previous to Attack of La Grippe.—Greatly emaciated. Very excitable and nervous, with occasional attacks of mild delirium.

Temperature normal or diminished; pulse ranging from 130 to 150. Urine passed, about four quarts daily, with specific gravity of 1·005 to 1·006.

Heart and lungs normal. Menstruation always delayed from ten to fourteen days, but normal in quantity and character. No uterine affection beyond a moderate prolapse. The epidemic began in this case with an elevation of temperature to 101·3°, with moderate delirium continuing two days.

On the third day the patient complained of feeling suffocated and of a constriction in the throat. An examination disclosed intense congestion of the entire pharynx and œdema of the larynx.

This œdema, contracting the rima glottidis to a very narrow slit, continued without diminution eight days, during which time the patient retained the erect posture, was cyanotic, and breathed with the greatest effort. Although I was anxious to insert a laryngeal cannula, the patient was thrown into so violent a state of agitation by the mere mention of it that I promised her to do so only if it were absolutely necessary.

By the eighth day the œdema began to subside, but had not entirely disappeared until after the lapse of three weeks from the time of onset.

Permit me to point out two phenomena, which I do not attempt to explain, that are of singular interest aside from the secondary throat disorder. One is this: That during the severest period of the disease the pulse fell to 70–80, and remained at this rate for about ten days; that during this period the patient was less nervous, and often intimated that, with the exception of her throat, she felt better than she had before for months. The other is this: That the quantity of water passed fell from four quarts daily to about one quart. Both of these curious symptoms remained constant during the height of the disease, but gradually gave way to the old conditions as the disease diminished, until finally the former distressing symptoms of rapid pulse and large volume of water became again constant.

Of the eight cases of spinal disease, the first is that of a "humpback." Owing to an injury to the spine by a fall from the arms when a young child, he was for many years more or less of a cripple.

He is four feet one inch tall, but the length of leg would make him a man six feet in height. He is an educated printer, setting all the type for the Latin and Greek writings of the Yale professors. His age is thirty-four.

Seven years ago he came under my observation, suffering from symptoms of compression of the spinal cord—namely, intense neuralgia, partial paralysis of legs and of the sphincters. Six months' treatment at that time sufficed to control the disease. Three days after the beginning of an attack of *la grippe* —having been quite well for seven years—these symptoms returned and progressed gradually to full paralysis, accompanied by aphasia. The aphasia was slight and continued only two weeks, but the paralysis is still complete after the lapse of three months. There were two interesting symptoms in addition to those mentioned—viz., the pulse was reduced during the attack to fifty beats, the normal rate being about eighty, and the spinous processes were intensely painful to the touch.

Three cases of curvature of the spine—in females—may be described together, as the secondary affections were similar.

The first, married, one child. Antero-posterior curvature moderate, of twelve years' standing. Under observation six years. Aged twenty-three years.

The second and third are cases of double lateral curvature, severe and progressive, of about fifteen years' standing; ages, twenty-five and twenty-seven years; unmarried. They have been under observation five years.

The attacks of grip in these three cases were not severe, but they had these symptoms in common: Reduction in rate of pulse about one third, extreme malaise, and very sensitive points along the course of the spine. The secondary affections were: Aphonia lasting from one to three weeks, without any visual alteration in the organ of sound, and purulent nasopharyngeal inflammation of several weeks' duration. In one of these cases, one of double lateral curvature, during mild delirium of four days' duration, the aphonia disappeared, to reappear again on the cessation of the delirium. In conjunction with the aphonia occurred, in all three cases, intense neuralgia of the larynx which disappeared at the same time with the former symptom.

The question arises whether this aphonia was not voluntary, owing to fear of increasing the pain by emitting sound; but it seemed to me not an act of volition, because local anæsthesia temporarily banished the pain; but the aphonia still remained. The cases of spinal irritation had been under treatment about a year when the epidemic seized them. Ages, nineteen and twenty-one; females of hysterical temperament, suffering from suppressed and difficult menstruation with inflammation and misplacement of the uterus. During the attack the spine was more than usually sensitive; the pulse was reduced in rate, combined with great prostration.

In both cases the naso-pharyngeal inflammation already spoken of constituted the secondary affection, and in one of these cases this form of inflammation extended through the larynx and well into the trachea. Aphonia was also a prominent symptom in one of these cases, but was evidently of a hysterical character, for she had suffered from repeated attacks of it, and during sleep she would speak out with natural voice.

The seventh case was one of spinal neurasthenia, in a lawyer, aged forty-seven years, whose coincident affections were laryngeal neuralgia with high development of aphthæ on the tongue, buccal mucous membrane, and pharynx. My first introduction to the case was during this attack.

Finding a greatly reduced pulse, I looked for sensitive points on the spine. Finding these well marked, I questioned him with regard to previous history, and thus learned of the cause of both symptoms in a spinal neurasthenia, dating from a severe attack of sunstroke occurring three years previously.

The last case is that of a female of twenty-seven years, who presented herself four years since to be treated for neuralgia pudendo-hæmorrhoidalis. On account of the intense pain on motion, she had been practically bedridden for two years. The correctness of the diagnosis of tabes dorsalis has been proved by the subsequent conduct of the case. The first symptom of the disease *la grippe* was an alarming prostration, with a reduction in the rate of the pulse from 74 to 30, and the second symptom most violent attacks of pain in the head and spine, with darting lancinating pains though the limbs and chest and the larynx.

The coincident disorder of the upper air passages was a purulent naso-pharyngeal inflammation, with severe and dangerous hæmorrhage, and aphonia lasting several weeks and from which she has not yet fully recovered.

Permit me, a moment longer in recapitulation, to remark—

First.—That disease of the upper air passages is not uncommon, coincident with attacks of the epidemic called *la grippe*.

Second.—That the usual form is a sanguineo-purulent inflammation of the pharynx, frequently extending upward into the dome of the pharynx and nasal cavities, and downward into the larynx and trachea.

Third.—That other incidental forms of disease may occur, a contributing influence toward which may be discovered in the previous pathological condition of the subject, as, for example, a plastic form of inflammation in those of a rheumatic or gouty diathesis, a lymphangeial inflammation in subjects of renal disorder, and forms of neuralgias and paralysis in cases of disease of the nerves and spine.

Fourth.—A reduced instead of an accelerated pulse is so constant a symptom in cases of previous disease of the spine that it may be considered of some diagnostic value in the detection of an unsuspected spinal disorder when occurring during an attack of *la grippe*.

Fifth.—That attacks of *la grippe* have such curious action in cases of previous spinal disorder, this action being illustrated by symptoms so closely allied to those of epidemic cerebro-spinal disease, that the subject of the connection between these two diseases is worthy of further investigation.

NASAL HYDRORRHŒA.

*WITH ILLUSTRATIVE CASES.**

By C. E. BEAN, M. D.,
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Nasal hydrorrhœa has been so seldom reported in literature and so seldom mentioned in any of the authorities that any light we may throw upon the course and treatment of the disease should be of interest. Those cases which have been reported have in a large proportion been due to injury to the base of the brain by traumatism. The cause in these cases is very easily traced and appropriate treatment rendered; but in another class of cases no appreciable local cause for this peculiar disease can be discovered. It is only found in catarrhal subjects; but this is not a sufficient cause, for the proportion of cases of nasal hydrorrhœa to the cases of nasal catarrh we encounter is too small to make it a factor in its production. The onset of the disease is usually sudden, without any premonitory symptoms, or preceded by attacks of sneezing similar to what we see in hay fever, or resembling an attack of acute coryza, with the exception that there is no dry stage, but from the very beginning a profuse watery discharge occurring either at intervals marked by periodicity or continuing day and night without interruption. The discharge is a thin, serous fluid, producing, if long continued, excoriation of the upper lip. Accompanying these symptoms there is in a certain percentage of cases conjunctivitis with frontal headache. During an attack examination of the nose shows the lining membrane to be pale and sodden, the tissues underneath being full to saturation of a serous fluid that exudes constantly upon the mucous surface and which no amount of wiping will keep dry. The membrane is pushed outward until it presses against the sæptum, almost if not entirely filling the nasal cavity. This condition extends to the posterior nares and in some instances affects the palate. The duration of the attacks vary even in the same subject, lasting in some instances only a few days and again extending over weeks. Not infrequently the attack merges into acute bronchitis or asthma, when the nasal symptoms disappear. The attack may terminate as suddenly as it begins, and for a considerable length of time, even for a year, the patient may have no manifestation of the disease. During the interval between attacks the nasal cavity and mucous membrane may present an almost normal appearance; in other cases nasal polypi may be discovered or enlargement of the turbinated bones with hypertrophy of the tissue covering them may result. It is usually unilateral though not infrequently bilateral, though in these cases one side is more affected than the other, and this continues the same during the entire course of the attack. It occurs at all seasons of the year, thus differing materially from hay fever. Outside of those cases produced by traumatism or due to the presence of polypi, the ætiology is masked and by no means uniform. It has been referred to paralysis of the trifacial nerve, to myxomatous degeneration in the antrum, or to the presence of polypi in the nose itself. In all cases, though outside of the exciting cause, it is found only in those with a marked neurotic temperament.

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* Read before the American Laryngological Association at its fourteenth annual congress.

I have notes of only three cases of this disease.

Case I.—In the summer of 1888 I was consulted by a married woman, aged thirty years, for the relief of a nasal hydrorrhœa that had existed for several weeks with more or less persistency. She had been subject to asthma for several years, but at the time of consultation was free from this, having had relief since the nasal hydrorrhœa had supervened. Examination of the nose revealed the presence of polypi in both sides. These having been removed by means of the snare and the stumps cauterized with a galvano-cautery point, the hydrorrhœa ceased and did not recur for a year, when it returned and she again consulted me. During the interval there was very little if any asthma. Inspection of the nose revealed the fact that the polypi had returned; they were again removed, and this time with the outer edge of the turbinated bones to which they were attached. Again the hydrorrhœa ceased and until March of this year did not reappear, although the asthma has been growing steadily worse. Since March there have been several attacks of the hydrorrhœa, lasting from a day to a week, though there has been no recurrence of the polypi. The severity of these attacks has been abated by the internal administration of strychnine, belladonna, and camphor. With the exception of a four-per-cent. solution of cocaine, which was of no benefit, no local application was made.

Case II.—Female, married, aged thirty-two, mother of three children, consulted me in September, 1890, for the relief of a watery discharge from the nose that had lasted for several days. There was intense headache and slight conjunctivitis. This patient had consulted me five years before this for the relief of a naso-pharyngeal catarrh of several years' duration, and the hypertrophied tissue covering the inferior and middle turbinated bones anteriorly had been thoroughly cauterized by means of the galvano-cautery. The attack was sudden and without any premonitory symptoms. The discharge was constant, preventing the patient's lying down or obtaining any prolonged sleep; both sides were affected, and the discharge was most profuse, running in streams from both nostrils, saturating in a few moments large towels and producing excoriation of the upper lip. This attack lasted three weeks, and terminated in an attack of asthma. Upon the termination of the attack of asthma in about two weeks, she was free from any appearance of this disease until the beginning of January, 1891, when another attack began very suddenly; this attack lasted until the middle of February, when asthma developed and the nasal symptoms disappeared. The asthma continued for nearly three weeks, and was finally controlled by large doses of lobelia and belladonna.

Both of these attacks came on at the menstrual period, and were at their height during the menstrual flow, extending over a period of a week. This patient had a uterine misplacement, and the proper application of a pessary which she had been in the habit of wearing, but which had been removed, seemed to be of undoubted benefit so far as the neurotic element was concerned, and thus serving to check the nasal hydrorrhœa.

No local application—such as powdered belladonna, morphine, bismuth, etc.—to the nasal mucous membrane was of any avail, and the use of cocaine aggravated the irritation and increased the discharge. Internally she was given McMunn's elixir and bromide of sodium in large doses, and these remedies, more than anything else, served to give relief both generally and locally. Since this time there has been no return of the attacks.

Case III.—Male, aged forty-five, a subject of hay fever and nasal catarrh, consulted me in January, 1890, for the relief of a nasal hydrorrhœa that had existed for two weeks. Only the left side of the nose was affected, the discharge occurring chiefly during the day in large quantities. There was such severe conjunctivitis that the patient was kept in a dark room for a week. The usual application of powders and cocaine was employed in this case as in the other case, but without any benefit. Internally he was given sulphate of atropine and camphor, alternated with bromide of sodium, but nothing that was done made any impression upon the discharge either as to quantity or character. The galvano-cautery was then employed, cutting down with a thin knife until the bone was reached. After the first effects of the cauterization had passed, the discharge was checked for a time, only to return with renewed violence. He was then advised to try a change of climate, and went to California, where the discharge soon ceased. Since that time he has had two light attacks, both occurring during cold weather, which have soon ceased without any special medication.

The results of treatment in this affection emphasize the fact that for this disease no line of treatment can be laid down.

Cocaine, that we would naturally expect to give relief, is in most cases of no benefit, and in some instances is positively injurious, for it produces in these cases the very effect we are trying to combat, while its effect on the general nervous condition is pernicious.

Outside of the cases produced by traumatism and polypi, no good result is to be hoped for from local medication.

The internal administration of antispasmodics to relieve and control the neurotic condition holds out the most encouragement for the best results. After the acute attack has passed, a general tonic treatment with iron, strychnine, and quinine, together with cold baths and massage, is to be recommended.

CANCER OF THE TONSIL TREATED BY LACTIC ACID.*

By E. FLETCHER INGALS, M. D.,
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G. R., a man, aged fifty-nine, came to me the 13th of July, 1891. He stated that about a year previously he began to be annoyed by an excessive quantity of mucus in the throat, and a sensation of an unusual enlargement or lump which interfered with swallowing. He experienced pricking sensations in the part at times. The trouble had been steadily growing worse during the six months immediately preceding his visit. His strength was good, but he had lost eighteen pounds in flesh, though his appetite and digestion remained fair. No hereditary or other cause could be assigned for the affection.

Upon examination of the throat, the diseased right tonsil was found fully four centimetres in diameter, with thickening extending from the gland to the anterior pillar of the fauces and the uvula. The diseased tonsil could be felt externally, but the cervical glands were not involved. I learned that this enlargement had all taken place within the previous few months.

Diagnosis.—Sarcoma of right tonsil.

Treatment.—A week later the entire gland was removed with the steel wire écraseur and the thickened uvula was at the same time taken off. The wound had nearly healed in three weeks, and I did not see the patient until about a month later, when he returned, complaining of a peculiar taste from the secretions in the throat. I found that the wound had healed, excepting a small spot six to ten millimetres in diameter, but new deposits had taken place at the site of the tonsil, forming a tumor about fifteen millimetres in diameter by six or eight in thickness.

To the ulcerated portion of the growth I applied a sixty-per-cent. solution of lactic acid, and the patient was given a weak solution of carbolic acid to use as a gargle. Similar applications were made every three or four days for about three weeks, with the effect of improving materially the appearance of the surface of the ulcer, which shortly after completely healed; but at this time thickening was noticed back of the posterior pillar in the right side of the pharynx, which rapidly increased in size until at the end of three weeks it measured about eight millimetres in thickness by ten in width and thirty in length. He suffered in the mean time some severe neuralgic pains, radiating from the tumor to the ear and side of the neck. There being no possibility of removing this thickened mass, it was injected with five minims of a twenty-per-cent. solution of lactic acid. At this time and for some weeks later profuse bleeding followed each injection. The strength of the solution was gradually increased to sixty per cent. of the acid, but this latter proved too strong, and two or three times occasioned sloughing, though the abscess formed would heal kindly. Subsequently the strength of the solution was reduced to fifty per cent. of the acid, and from eight to ten minims were injected in one or two places about three times a week, with the result of speedily diminishing the size of the indurated mass into which it had been thrown. The cancer, however, progressed, affecting the base of the tongue, the side of the pharynx, and the right side of the larynx, at times causing much difficulty in deglutition and often a good deal of pain; but the injections would reduce it, each time apparently causing the disappearance of a mass of the growth six or eight millimetres in diameter. By following up this plan until the present time the disease has been kept so far in check that the patient has been able to swallow with comparative comfort most of the time, and has had no difficulty in respiration, the condition now, ten months after the first injection, being but little worse than it was at that time, excepting that the disease has extended slightly to the cervical glands. During the progress of the treatment masses the size of a large filbert have been frequently caused to disappear in a few days.

The free bleeding which, during the first three or four months, usually immediately followed the injection has not occurred latterly, and no sloughs have formed when a solution not more than fifty-per-cent. strong has been employed. In all cases where sloughs have been produced the cavities have healed readily with one exception; in this a small opening remains, but the surface has healed.

The injections have always been made deep into the tissues and have sometimes given very considerable pain, which has lasted in some instances for several hours, but, on the whole, the amount of suffering has not been great. On several occasions when the disease was spreading rapidly in the base of the tongue or in the pharynx, three or four injections have reduced it again almost to the normal condition. The patient has experienced considerable inconvenience from the injected solution running out of the opening as the needle was withdrawn, or from the needle having been thrust into a cavity, formed by some former injection, which communicated with the surface so that the acid would run down to the larynx and cause severe coughing and spasm of the glottis; but these spasms have always disappeared in a few seconds.

To day the patient's general health and strength remain good. He seems to have lost but little if any in flesh, and I feel satisfied that his life has been prolonged for several months, though gradual extension of the disease beyond the reach of my hypodermic needle warns me that a time is coming when my efforts will prove futile. The injections into the base of the tongue and larynx have been made by means of a hypodermic point soldered into a firm bent brass nozzle about four inches in length, which was attached to an ordinary hypodermic syringe. Usually from six to twelve minims of a solution varying in strength from thirty-five to fifty per cent. have been employed at each sitting, and on a few occasions, where considerable pain was caused or expected, a small amount of cocaine has been added to the solution.

I have followed the injection of the acid immediately by a spray consisting of morphine, gr. iv; carbolic acid and tannic acid, āā gr. xxx; glycerin and water, āā f℥iv, with the effect of materially reducing the pain caused by the injections, lessening the hæmorrhage, and thoroughly disinfecting the throat.

Though the treatment of this case has not been curative, it suggests the possibility of retarding the growth of cancerous tumors not accessible to the knife by the use of interstitial injections of lactic acid. I hope that others will try it in similar cases, and also for the reduction of glandular enlargements. I would recommend that whenever used beneath the skin the amount should not exceed ten or fifteen minims of a solution of from twenty to forty-five per cent. of the acid.

The needle used for the purpose should be cleaned with alcohol, and it is well to have a small amount of some light oil, such as liquid albolene, drawn through it, directly afterward, to prevent rusting.

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* Read before the American Laryngological Association at its fourteenth annual congress.

THE ABDOMINAL BRAIN.

By FRED. BYRON ROBINSON, M. D.,
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In vertebrate animals there are two brains of about equal importance. One is situated in the cranium and is useful for protection and intellectual progress. The other is situated in the abdomen just behind the stomach and is useful for nourishment and visceral rhythm. One brain is not wholly independent of the other, but a fœtus will live nine months without the cranial brain. On account of the difficulty of experimentation and obscurity of results, the abdominal brain and its plexuses have not received their share of attention. Several years of study of the abdominal brain and its plexuses have fully convinced me that it is a field full of fruitful rewards.

The slaughter-house is the place to get fully impressed by the greatness of the abdominal brain. In all the lower animals which I have examined (pig, dog, cow, sheep) the abdominal brain is very much larger in proportion to their size than in man. Man's cranial brain has overshadowed his abdominal brain on account of the active and persistent exercise of his wits throughout all the ages of his ascendency. But man's abdominal brain still exists and plays a mighty rôle in nutrition and disease. The diseases of the cranial brain are mainly *organic*. The diseases of the abdominal brain are mainly *reflex*. The functions of the cranial (brain) nerves are inhibitory, or to keep up a sober action; in short, to slow physiological processes. The function of the abdominal brain is to produce rhythm or to accelerate action; in short, to hasten physiological processes.

The abdominal brain and its ganglia alone possess the power to produce rhythm. It is a kind of cyclical, periodical motion. A rhythm has a maximum and a minimum. The maximum is the time of highest activity. Then motion or rhythm is at a crisis. The highest physiological function is reached. The minimum is the stage of lowest activity. It is the time of rest, of repose, and repair. Every viscus has its rhythm so that it can produce its physiological products and then get time to rest and repair itself. The rhythm of every viscus is accomplished by little ganglia situated in itself. These peripheral or visceral ganglia I shall call automatic ganglia. Each viscus has its own time of rhythm according to its use. Three years ago I published some views to the effect that in the walls of the tubes and uterus were situated small ganglia which initiated, sustained, and inhibited the menstrual rhythm; that menstruation was simply a periodic rhythm of the *automatic menstrual ganglia*. I also maintained that menstruation belonged to the tubes and uterus only. I have entirely failed to find the rhythm of the ovary as to time of ripening of the Graafian follicle. It seems to me that study and time have confirmed the existence and function of the automatic menstrual ganglia. Later study and observation have aided in extending the idea of visceral rhythm by automatic ganglia to the digestive tract, the bladder, the liver, and the spleen. The heart is well known to be governed mainly by Remak's, Bidder's, Ludwig's, and Schmidt's *automatic cardiac ganglia*. Much of the so-called functional diseases of the heart will be found due to *reflex* action of visceral disturbances through the abdominal brain. The abdominal brain is the way-station where diseased and other forces are reorganized before they are sent over the various sympathetic plexuses to the various viscera. But the so-called "sympathetic disturbances" are executed on distinct physiological and anatomical lines. It, of course, must be kept in mind that many persons are unfortunate enough to be born with a small or defective abdominal brain. In this little article I will simply call attention to a few outlines in regard to the abdominal brain. A description of the rhythm of the liver through its *automatic hepatic plexus* will suffice for the rhythm of any viscus. The occasion of a rhythm of the liver is due to food carried to it through the portal vein. When the food from the portal vein reaches the liver cells they begin to swell from activity. Now the liver can expand because the peritonæum surrounding it is elastic, and also its capsule is elastic. Thus the physiological activity of the liver cells induces them to swell and expand the liver to a maximum; then the physiological products of the liver (bile, urea, and glycogen) are driven to their respective homes when the two elastic capsules of the liver force it to contract. When the liver is contracted to its minimum it gets time to rest and repair, when it is again ready for another rhythm. Whatever disturbs and balks the rhythm of the liver impairs nutrition. Nearly all disturbance of rhythm in any viscus comes from reflex action through the abdominal brain. We have special automatic ganglia of the digestive tract in Auerbach's and Meissner's plexuses. If Auerbach's plexus is disturbed we have too much muscular contraction in the gut wall (colic). If Meissner's plexus is disturbed we have a disturbance in secretion of digestive fluids. We may have too little secretion (constipation and indigestion) or too much secretion (diarrhœa and indigestion). We may also have a disproportionate or vitiated secretion (fermentation and indigestion). It is all malnutrition brought about by disturbance of the rhythm of the digestive tract. The disturbing factor is mainly *reflex* through the abdominal brain from some distant viscus. The occasion which induces a rhythm in the digestive tract is the presence of food. So every viscus has its own rhythm by its own automatic ganglia situated in its substance. The spleen, just like the uterus and tubes or the liver, goes through its rhythm through the *automatic splenic ganglia*. The kidney has its *automatic renal ganglia* as well as the bladder and ovary.

Observation of several thousand women clinically has demonstrated to me clearly that a woman goes through definite pathological stages from uterine disease, and the explanation is clear and logical when made through the abdominal brain by *reflex* action. In the natural history of a uterine disease there are *five* stages.

1. The woman gets a lacerated cervix or endometritis. This pelvic *irritation* is reflected up the hypogastric and ovarian plexuses to the abdominal brain, where the forces are reorganized.

2. The reorganized irritation is sent from the abdomi-

nal brain over tracts of least resistance, which will be the nerve plexuses containing the greatest number of nerve cords. The first manifest trouble will be disturbance of the rhythm of the digestive tract (stomach, intestines, liver, and spleen). The automatic ganglia in the walls of these viscera have been irritated and the result is *indigestion.* This is the second stage in the results of uterine disease.

3. The third stage is *malnutrition.*

4. The fourth stage from pelvic disease is *anæmia.*

5. The fifth stage is *neurosis.* The whole stages may frequently require five years, and I have often women to consult me five years after a cervical laceration. We may then begin with (1) irritation, (2) indigestion, (3) malnutrition, (4) anæmia, (5) neurosis. All this was brought about by reflex action through the abdominal brain starting at the periphery of the hypogastric plexus. The main pathology of the sympathetic is due to reflex action. The reflex action does its damage by simply deranging the *rhythm* of some viscus.

The common disturbance in the eyes from uterine disease is simply by reflex action through the fifth cranial, intensified by the *six* ganglia situated on this nerve.

BARIUM CHLORIDE IN EPILEPSY.

By JUSTIN D. LISLE, M. D.,
SPRINGFIELD, OHIO.

Epilepsy is one of the oldest diseases known to medical art, and for the relief of it our materia medica is almost exhausted. Remedy after remedy has been tried, only to prove partially satisfactory, if not a complete failure. The silver salts formerly, and latterly the bromides, especially a mixture of the bromides of the alkalies, have met with the most encouragement. Yet with all there is still something lacking. Some years ago my attention was attracted to barium chloride, a salt occupying an insignificant position in our therapeutics. This fact I am unable to account for, except for the reason of its many incompatibilities; consequently it is necessary to administer this drug alone, and in that state it is very disagreeable. Barium chloride occurs in colorless tablets, insoluble in absolute alcohol, freely soluble in water; it is incompatible with sulphates, phosphates, carbonates, and is decomposed by most of the salts of organic acids. Silver nitrate decomposes it.

Writers on materia medica say of barium chloride that it possesses a disagreeable, bitter, astringent taste, and causes a sense of heat and burning at the epigastrium. Active peristalsis of the bowels and copious alvine evacuations are excited. The nervous system of organic life is stimulated; it slows the number of heart-beats, at the same time contracting the caliber of the arteries. Having an action similar to digitalis and ergot, its therapeutic use is confined to the treatment of aneurysms, hæmorrhages, acute congestions, etc. While we hold prominently before us the facts that barium chloride slows the action of the heart and contracts the caliber of the arteries, and that preceding and during an attack of epilepsy, in both *petit mal* and *grand mal*, there is *increased* action of the heart, dilated arteries, cerebral congestion, and in *grand mal* strong pulsation of the carotids and bulging of the eyeballs—keeping this antagonistic action before us, I should like to give the clinical history of two cases of epilepsy wherein barium chloride was the only remedy used:

Case I.—W. P. O., white, male, aged nineteen; occupation, laborer; complexion, brunette; constitution and general health good. Parents healthy, with no history of nervous disease. This patient never had spasms when an infant; no severe injury or surgical operation; habits of life temperate, hygienic surroundings good; a history of moderate masturbation and nocturnal emissions. Has had fits since nine years of age. At first they occurred about once a year. For a year previous to September 5, 1886, has been having *three a week.* The fit is preceded by a peculiar dizziness, lasting for only a moment; when this passes off he feels as well as usual. In the course of an hour he will straighten up, roll his eyes, turn his head toward the right and fall to the left, and remain unconscious about fifteen minutes. No cry, no biting of the tongue, or frothing at the mouth. The attacks are single and occur in *daylight* only. Upon recovering he experiences very little muscular soreness. No vomiting. Appetite is good, sleeps fair, and bowels regular.

September 8, 1886.—Commenced the administration of barium chloride—one eighth of a grain every four hours.

10th.—The patient had a very light fit; has noticed no disagreeable symptoms from the barium.

18th.—Had a very light attack, occurring about nine o'clock in the *evening*, the first he has ever had after sundown; was unconscious about five minutes. No headache, muscular soreness, or weakness followed; head feels remarkably clear. I now increased the dose to a quarter of a grain every four hours. On September 28th felt his premonitory aura, dizziness, frontal headache, and spasm of the left sterno-mastoid sufficient to turn his head. Took a double dose of the barium chloride (half a grain) and escaped his fit.

October 15th.—At 8.30 P. M. had the first fit since September 19th. Such is the record of this case up to June, 1887, the fits occurring about once every six weeks. Between June, 1887, and January, 1888, he had three attacks, since which time I have lost sight of him.

In this case there are a few points to which I wish to direct attention. First, the large dose taken upon September 28th without causing gastric disturbance and with abortion of the attack, so strongly predicted by the distinct aura. Second, the change from diurnal to nocturnal. Third, in the description of this patient I stated that he was a "brunette"; it has been a matter of observation with me that out of about two hundred and fifty cases of epilepsy I have never seen a "blonde"; in one case that I knew of the patient originally had brown hair, but it ultimately turned black; what this signifies, if anything, I am unable to state.

Case II.—C. C. R., white, male, aged fifty years, occupation painter, brunette complexion, no history of nervous disease. During the war received a contused wound upon the right side on a line with the middle of the axilla and on a level with the nipples. Between 1864 and 1884 has suffered with *petit mal*, having about three attacks a month, except in extreme hot or cold weather, when they would occur every four or five days. In 1884 he experienced the first seizure of *grand mal*, and from that time averaged three a month. The aura started from the cicatrix from the wound in the side, attracting his attention to that part by fibrillary spasms in the muscles of the right side; the sensation then appeared to travel to the spinal cord, thence to the brain, whereupon he falls to the ground, muscles become rigid, a little froth collects at the corners of the mouth; in his last attack uttered for the first time a "cry." Always feels very sore upon recovering. Attacks usually occur about twilight. On September 7, 1886, I gave him the barium chloride in eighth-grain doses every four hours; at the end of a week reports a total disappearance of the peculiar dull feeling in the head and speaks of a remarkable clearness; has a good appetite, sleeps well, and bowels regular. On October 2, 1886, at 5 P. M., felt his aura distinctly; took three eighths of a grain of the barium and got off without a fit. On October 13th again felt his aura; took half a grain and escaped, but vomited. On December 4th had the first fit since September 7th. During 1887 he had three fits, one in April, July, and December, since which time I have lost sight of this case.

Now that the alkaline earths are claiming recognition, I feel as though barium was not without some therapeutic value and should have its share of investigation.

FRACTURE THROUGH THE CORACOID PROCESS OF THE SCAPULA.

REPORT OF A CASE RESULTING FROM DIRECT VIOLENCE.

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MORE than two years ago I had the honor of exhibiting to the Section in General Surgery of the New York Academy of Medicine, through the invitation of the secretary, Dr. Charles A. Powers, and through the kindness of Dr. Charles K. Briddon, attending surgeon to the Presbyterian Hospital, a case of fracture through the coracoid process of the scapula.

The history of the case in brief is as follows:

W. J., aged seventy-one, was admitted to the accident ward of the Presbyterian Hospital in December, 1889. Two weeks previous, while running rapidly in the street, hoping to overtake a surface car, he slipped and fell forward, striking the front part of his left shoulder on a projecting paving-stone Recovering from the fall, he went to his home and continued his work, which was of a clerical kind, until, aroused by pain and disability, he sought relief at the hospital.

On admission, attention was almost immediately directed to an area of discoloration, about two inches in diameter, just below the outer third of the left clavicle. The patient was emaciated, and the tip of the coracoid process was made out with ease. There was tenderness over the entire shoulder, but palpation over the discolored area elicited acute pain. By fixing the scapula, moving the arm backward and forward, grasping the apex of the process between the thumb and index finger, and by a rocking movement, independent mobility and bony crepitation could be appreciated. By a manipulative procedure, fracture through the scapula's acromial end and through the outer portion of the clavicle was excluded.

Wellington Byers's[*] diagnostic test of shrugging the shoulders was attempted, but the patient experienced so much pain in the effort that it was not repeated. Indeed, the importance of this test was impressed upon me, for the shrugging movement seemed entirely out of the question. Helping still further toward establishing the diagnosis, the patient experienced pain radiating in the direction of the muscles attached to the coracoid's tip by a series of gymnastic movements bringing into play these muscles. The hand could be applied to any part of the head without occasioning much uneasiness. No particular alteration in the shape of the shoulder was made out, yet the apex of the fractured process seemed somewhat lower than its fellow of the sound side.

Treatment was commenced by the application of a figure-of-eight bandage and a wedge-shaped axillary pad. Passive motion after the fourth week. Fibrous union was ultimately effected.

The following is a brief review of the cases of coracoid fracture collected from various sources. There are fifty-five in all. I doubt not that there have occurred other well-authenticated cases:

Ashhurst[*] reports a case, that of an elderly woman who fell backward in a narrow passage, striking on her elbow and thus forcing the humerus upward and forward, sustaining a fracture of the coracoid and presenting the usual signs.

Gant[†] reports a remarkable case of a double fracture through the acromial and coracoid processes with a fracture also of the body of the scapula, passing through the spine and supraspinous fossa. Direct violence was the cause of this extensive injury, the wheel of a dust-cart having passed over the shoulder of the patient. This specimen is on exhibition in the King's College Museum.[‡]

I am indebted to Dr. James Warbasse for the record of a case occurring in the service of Dr. Fowler in the Methodist Hospital, Brooklyn:

This patient was thrown violently forward, striking his right shoulder against a wall, but not falling to the ground. Examination demonstrated, besides contusion of the soft parts, a fracture through the coracoid process. There was very little displacement. Treatment, a plaster Velpeau. Recovery good.

Hamilton[#] mentions Professor John Neill's case, and while he regards it as an example of coracoid fracture, he maintains that it was simply an epiphyseal separation, since the acromial process had not yet united. But Dr. Byers[‖] evidently regards it as one of true fracture with the common sequence—fibrous union; he further observes regarding this case: "The scapula is large, well developed, and doubtless came from an adult."

Gibson[△] reports two cases. In one of these there was displacement with ligamentous union.

Hamilton[◊] also speaks of Mussey's remarkable case complicating a forward dislocation of the head of the humerus. A specimen[↧] of this fracture can be seen in the museum of the Massachusetts Medical College.

Bransley Cooper's[↕] case was an interesting one. A post-mortem dissection eight weeks after the accident verified the diagnosis. There was fibrous union and complicating fractures through the acromion process and through the head of the humerus.

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[*] *Ref. Handbook of the Med. Sci.*, vol. vi, p. 299.

[*] *International Ency. of Surg.*, 1884, vol. iv, p. 114.

[†] *Sci. and Pract. of Surg.*, vol. i, p. 785, 3d ed.

[‡] Specimen 1,170–'2. *Path. Trans.*, 1869, vol. xx, p. 270.

[#] *Fractures and Dislocations*, p. 247.

[‖] *Loc. cit.*

[△] Gibson, Philadelphia. *Treat. on Surg.*, vol. i, p. 258, 3d ed.

[◊] *Ibid.*

[↧] No. 453.

[↕] Cooper. *Fractures and Dislocations.*

Hamilton makes mention of two cases in his own practice, and of Arnott's case, Middlesex Hospital, London, demonstrated by dissection; Little's cases, resulting from direct violence and complicated by complete paralysis of the arm and forearm; Hose's case, uncomplicated; and Hulme's case, which was said to have been caused by muscular action.

Holmes,[*] after speaking of the injury as being extremely rare, mentions two cases, both complicated by subluxation of the shoulder joint.

Malgaigne[†] reports four cases, all having been confirmed by dissection; these four presented no features of special interest.

Erichsen[‡] mentions a preparation in the museum of the University College Hospital, showing a fracture of the base of this proces, extending through the glenoid cavity, and complicated by an acromial fracture.

Stimson[#] refers to three cases reported by Gurlt; in these the injury was caused by moderate violence.

John F. South,[‖] in his translation of Chelius's work, says: "I had an instance of this accident under my own care some years ago in St. Thomas's Hospital, and it was accompanied with partial dislocation of the upper-arm bone from the glenoid cavity and a fracture of the olecranon."

Professor D. Hayes Agnew[△] reports one case; the diagnosis was verified by dissection.

Of the twenty-eight cases mentioned above, many are included in the analysis made by Dr. Byers;[◊] of the remaining twenty-seven there are at least two which deserve special mention. Byers's patient, a man aged thirty-three, fell backward while in the street, alighting with full force upon his left shoulder. Examination demonstrated the presence of a slight subluxation of the head of the humerus forward. Manipulation elicited crepitus, and the point of maximum tenderness was found to be over the coracoid process. The crucial test of shrugging the shoulder was tried in this case, and the performance of the act was found to be impossible by reason of the violence sustained. Dr. Byers entertains the opinion that the humeral head was driven with such force against the coracoid process as to cause a rupture of the coraco-humeral ligament and a fracture of the process.

The second case is one reported by Bennett,[‡] of Dublin. Byers styles it "the most unique of specimens, and probably is the only case of the kind ever verified by an autopsy." The patient, a man, was crushed by the falling of masonry, sustaining a *green-stick* fracture of the coracoid's apex, a complete fracture through the base of the process extending all the way across the supraspinous fossa, and other injuries which soon terminated in death.

The treatment of this fracture can be dismissed in a few words. Immobilization is necessary. An effort should be made by position to relax the muscles attached to the coracoid's apex, and this can best be accomplished by flexing the forearm and carrying the elbow across the chest, allowing the finger tips to rest upon the opposite shoulder. The using of the axillary pad seems to be indicated, but pressure by means of a pad over the seat of fracture is of doubtful utility.

Axillary excoriation can be avoided in the treatment of this fracture as well as in clavicular and acromial fractures by shaving the axilla and liberally insufflating lycopodium powder.

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[*] *System of Surgery*, vol. ii, p. 775.

[†] *Bull. de la Soc. anat.*, 1826, p. 512.

[‡] *Sci. and Art of Surg.*, vol. i, p. 559.

[#] *Frac. and Disloc.*, vol. i, p. 352.

[‖] *System of Surg.*, vol. i, p. 549.

[△] *System of Surg.*, vol. i, p. 876.

[◊] *Loc. cit.*

[‡] *Trans. Acad. Med.*, Ireland, 1883.

EXALGINE
IN PAINFUL NERVOUS AFFECTIONS.[*]

By WILLIAM C. KRAUSS, M. D.,
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The one symptom of paramount importance to the physician, and the one for which he is most frequently called upon to prescribe, is pain. Neuralgic pains, of whatever source and whatever description, are at times most obstinate and intractable in yielding to the resources which the neurologist has at his command. It was no wonder, then, when Dujardin-Beaumetz depicted the great analgesic power of exalgine before the French Academy of Sciences, that observers the world over hastened to test its power of palliation in the varied painful affections. The great eminence of its champion forbade almost any but glittering results, and, forsooth, such seems actually to be the case.

Fraser, Bardet, Gaudineau, Desnos, Moncorvo, and Ferreira, in the publication of their reports soon thereafter, corroborated all that had been promised of this new agent, some even asserting that its praises had only been half sounded. At the present time scarcely a week passes without one or more communications in the medical press laudatory of its great analgesic, antichoreic, and antirrheumatic qualities. Especially in the treatment of neuralgic affections was it most highly vaunted, and decided if not complete relief was obtained within the first hour after the initial dose.

My experience with exalgine is a sad story, and I would fain repress it were it not for the fact that perhaps I may find some sympathy from the members of this association.

A brief report of my cases is as follows:

Case I.—Male, aged fifty. He has been troubled for some time with neuralgia of the fifth nerve. I prescribed exalgine in three-grain doses three times daily. After four days' trial I was obliged to abandon it, not having observed any improvement.

Case II.—Male, aged thirty-five. He suffered from a recent attack of trigeminal neuralgia with painful spots along the course of the three divisions. I ordered exalgine in five-grain doses to be taken twice daily. After taking the second dose he noticed a peculiar sensation creep over him: he became numb, his eyes blurred, gait was unsteady, could not tell where he was, etc. After five to eight minutes he recovered from the attack. The pain subsided during this time, but reappeared with greater intensity on his regaining consciousness. Exalgine was abandoned.

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[*] Read at the eighteenth annual meeting of the American Neurological Association, New York, June 23, 1892.

Case III.—Male, aged thirty-two. He suffers periodically with sciatica of the left leg. Exalgine in eight-grain doses dissolved in rum and water failed to produce any beneficial effect, and after the fifth day it was discontinued.

Case IV.—Female, aged forty-two. She has been a sufferer for the past five years with neuralgia of the fifth, sixth, and seventh intercostal nerves of the left side. There appears to be no disease of the vertebræ. The patient is anæmic, in poor health, and has had three miscarriages. The onset of her neuralgic trouble dates from the time of her last miscarriage. Exalgine in four-grain doses failed to relieve, and a change of treatment was decided upon.

Case V.—Female, aged thirty-seven. She has been a sufferer with tic douloureux for a few years. The past year the attacks became more severe, and the patient was given exalgine for several days without avail. The case having been transferred to me and not knowing of the previous administration of exalgine, I prescribed it in four-grain doses dissolved in rum and water, every two hours if necessary. After five days of agony it was superseded by another of the synthetic compounds which promptly gave relief.

Case VI.—Another case of tic douloureux in which exalgine was administered as in the preceding case. No beneficial result whatever followed its use.

Cases VII and VIII.—Females, aged twenty-five and thirty years, respectively. Both have been afflicted with neuralgic headaches for a short time. Exalgine was prescribed in both cases with equally poor results.

Case IX.—Male, aged twenty-nine. He has been troubled with vague rheumatic pains about the elbow and shoulder joints, although he has never had an acute attack of rheumatism. Exalgine failed to produce any alleviation.

Desirous of trying the efficacy of exalgine in chorea, I employed it in two cases, which are here briefly appended:

Case I.—Female, aged eight years. The father is a morphinist, and the mother is possessed of a highly neurotic temperament. The patient has one sister, who is afflicted with tuberculosis.

About a year ago she exhibited signs of chorea, and was promptly treated with Fowler's solution of arsenic. No improvement occurring, she was placed on exalgine, in small doses oft repeated, and followed this treatment nearly five weeks. At the end of this time it was suspended, and, after an interval of two months, was again resorted to with unfavorable results.

Case II.—Female, aged nine years. Family history is good. The patient has always been in good health until seven weeks ago, when she showed the characteristic symptoms of chorea. Exalgine was administered immediately and continued until the mother objected to its further use. As no abatement of the symptoms was noticed, I agreed to discontinue it.

Eleven cases ordinarily are insufficient to enable one to form much of an opinion, but certainly eleven similar results are sufficient to strengthen or shake the confidence of the individual observer in a certain drug. Why a drug whose administration has been followed by such brilliant results in the hands of some should give such brilliant failures in my hands I can not understand. Fraser[*] treated eighty-eight patients with painful disorders of various kinds, and succeeded in quieting the pain in sixty-seven. Of these cases, fifty-two were neuralgia, forty-eight of which terminated in recovery. Moncorvo[†] treated twenty-one cases of diverse painful affections of childhood with exalgine, and succeeded in obtaining a rapid recovery in every case. Ferreira[‡] reported seven cases in which recovery followed the use of exalgine in all.

Many more observers have reported equally successful results in the treatment of neuralgias and allied disorders, but space and time forbid their enumeration.

In chorea excellent results have likewise been obtained, among others by Löwenthal, who recently published a paper giving details of thirty-five cases successfully treated with exalgine.

My object in reporting my discouraging results is to protest, feebly though it be, against the almost unanimous verdict which medical writers have accorded this drug. Those of my friends with whom I have conversed concerning the virtue of this compound have, strange to say, had experiences similar to my own. To explain this remarkable variance is not my intention; the only point I wish to make is that not every neuralgic pain vanishes upon the administration of exalgine.

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ONE OF THE APPARENT REASONS WHY MAN IS AFFLICTED WITH TUBERCULOSIS.[#]

By E. F. BRUSH, M. D.,
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The human race is grievously afflicted with tuberculosis, and it seems to be an old, old enemy to man. There is no organ or structure in his entire anatomy that is not subject to the invasion of the minute forms which make in man's economy, somewhere or anywhere, a tubercle for their residence. There is no other disease that is so capricious, so versatile, and so deceptive. It is unlike other diseases, because there is no constant road in which it travels; it attacks all ages and conditions under any and all apparent circumstances. Often and again man will imagine he has been able to make out the source of this stream of death, and finds, after years of study and research, other numerous sources that are just as much entitled to the distinction as the first discovery. For many years it was established with apparent truthfulness that the disease was a hereditary affection, but, when the dead-house was entered and the fœtus in the womb of the victim was investigated, it was found that with very rare exceptions indeed did the minute organism which characterizes the disease ever pass the gates of the placental circulation, and so to-day it is not classed as a hereditary affection, but as an acquired disease. We are quite confident at the present time that true tuberculosis is the result of the presence and growth of a small organism that invades the tissues and makes for itself a local habitation, which we term a tubercle from its resemblance to a tuberculous plant. At first it is insinuating and almost if not quite imperceptible, and, like Uriah Heap, very humble, but, as the colony increases and its abode enlarges, it begins to assert its presence, sometimes by simply stimulating the activity of the structure it invades, and later the entire economy takes on an increased activity, bodily temperature is increased, the blood circulation is accelerated, nutritive processes are impaired, waste exceeds repair, and the tuberculous abode of his majesty, the bacillus, breaks down into ruins, and the crumbling walls enter the river of life, which thus becomes putrid, and sepsis overpowers the victim. As to the little germ that causes the calamity, we know not whence it came nor whither it goeth after its dire work is accomplished.

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[*] *British Medical Journal*, Feb. 15, 1890, p. 344.

[†] *Bulletin général de thérapeutique*, May 30, 1891, p. 453.

[‡] *Ibid.*, Sept. 15, 1890, p. 211.

[#] Read before the American Social Science Association, August 31, 1892.

Man is not the only animal afflicted with tuberculosis. Undoubtedly, more deaths occur among the members of the human race than among the lower animals, but there are far more dairy cows infected with tuberculosis, in proportion to their number, than in the human family. There is one very good reason why fewer deaths occur among dairy animals than among mankind, and it was this discovery, which I am about to relate, which led me to the conclusion that the cow was the mischief-maker.

The reason that the tuberculous cow is not killed by the tuberculous process is found in her high natural bodily temperature. We know pretty conclusively that the tubercle bacillus requires for its growth and multiplication a temperature above the normal human bodily heat, and, curiously enough, the raised temperature of the human subject that is pathognomonic of the growth of tuberculous masses is the normal bovine temperature. Consequently, tubercle will grow in the cow without any disturbance of her normal temperature, and the train of evil consequences that follow the effects of increased bodily heat do not occur in the cow from an invasion of tuberculosis. Therefore the process goes on in the animal, and, unless other morbid conditions supervene to increase the bovine temperature, the tubercle does not break down and cause sepsis, which is always the cause of death where the primary disease is tuberculosis. When the cow dies of acute miliary tuberculosis some other than the existing tuberculous disease has supervened to increase her temperature and interfere with the normal condition of the tubercle. And right here is another curious fact—namely, that as some other condition than tuberculosis must arise in the cow to cause the breaking down of the tubercle when it exists, so, contrariwise, some other morbid affection than tuberculosis must first increase the temperature in the human subject before the tubercle bacillus can commence his morbid antics. When the tubercle-building has commenced by reason of a proper high temperature, the growth of the tubercle and the fermentative action of the multiplication of the bacillus will of itself continue the required heat, and this continued increased temperature is sufficient to lower nutrition and resistance, and consequently the tubercle finally breaks down, in man without the intervention of any other morbid condition, as is required in the cow, to cause the same septic condition that kills both.

Now let me enumerate some of the causes alleged as accounting for the presence of tuberculosis in man, and you will see that all of these causes are at work with our dairy animals under the present modes of breeding and feeding in the so-called best milk breeds.

First we will consider breeding. Vigor and robustness in the offspring are undoubtedly maintained by the union of individuals not consanguineously related. Consanguinity will always attenuate the vigor of any breed of animals. Close in-and-in breeding decreases the size, increases nervous intensity, promotes early maturity, and lowers the resistance to disease by reason of the delicacy of the muscular tissue. In other words, to use an old-fashioned term, consanguinity produces scrofula. Scrofula is a condition which we all recognize as one which seems to make the individual prone to phthisis.

Scrofulous females in the human race usually secrete an abundance of milk, because in scrofula there is an unusual tendency of glandular enlargement and activity. As the mammary is the highest type of glandular structure, it is stimulated to increased action. A scrofulous cow is usually the largest milker, and the closest kind of consanguinity has been practiced by cattle-breeders, with the object of producing a scrofulous animal, not because she is scrofulous, but because the particular form she represents are the largest yielders of milk. We find, too, that consanguineous breeding has been alleged as one of the causes of tuberculosis in the human race, where it never can be conducted with so close and intimate blood relatives as in the dairy animals. So here we have at work in the cow one of the alleged causes of tuberculosis in man.

Next in regard to climate. The absence of phthisis in high, dry, mountainous regions has been accounted for by reason of the altitude and absence of moisture in the atmosphere; but here occurs a somewhat curious fact—namely, that the cow does not thrive in high, dry, mountainous districts, but in the low, swampy, moist region, where the succulent and lush grasses grow, is the place where the cow flourishes, and it is in these regions also that tuberculosis abounds in both the bovine and human subjects.

No name has shed more light on the history of phthisis than that of Laennec, who himself died of a pulmonary phthisis, and he said that he knew of no more certain cause of this disease than profound or prolonged grief or melancholy. In the dairy we often see the variety of grief represented by "Rachel weeping for her children." The maternal instinct is a strongly-marked characteristic in the dairy cow, and, as grief is one of the minor conditions which favor the development of tuberculosis in man, it must be allowed as a factor also in the case of the cow.

There is no doubt that nutrition plays as important a rôle, ætiologically, in the development of tuberculosis as any other single factor outside of the actual presence of the bacillus. Defective nutrition, either from lack of variety, insufficient quantity, or interference with the nutritive functions in any manner, all cause lowered resistance to such an extent as to favor the invasion of tubercular infection. This is true as relating to the human race, and we must give it some weight as a factor in the development of tuberculosis in the lower animals. Owing largely to the cheapness of milk, if the dairyman is to feed his animals with the materials most favorable for nutrition, food must be cheap and stimulating to glandular structures. With rare exceptions do we ever find the cow getting the whole grist of any of the nutritious grains. The materials classified by the dairyman as the best food for cows are the refuse from hominy mills, starch factories, glucose factories, breweries, distilleries, and, in fact, every refuse that is left after working up the nutritious cereals and getting the best out for the nourishment of some other animal. Even on the farms the poorer varieties of hay and grasses are always designated as cow food. So we have here at work in the dairy animal another alleged cause of tuberculosis in man.

Phthisis in the human subject is most frequently associated with sedentary occupations. Tailors, seamstresses, and other hand workers present more than the usual percentage of deaths from this disease. The same is true of the victims of forced confinement from whatever cause. Baer's statistics of prisons show among the inmates a mortality four times as great as outside. While the average total mortality of phthisis is fifteen per cent. of the total mortality of the world at large, in prisons it amounts to forty or fifty per cent. The mortality of manufacturers is twice as great as that of outside occupations, while the cloisters of the Old World show a phthisis mortality of fifty per cent.

During the winter months the cow is, as a rule, subjected to close and prolonged confinement in an ill-ventilated and foul stable, and if confinement can be considered a factor in the development of the disease in man, it must be reckoned as a factor with the dairy animal. Prolonged lactation is another cause of phthisis in the human subject, but no woman is subjected to so prolonged and continuous lactation as is required of the dairy animal.

From the time that she is two years of age or under she is milked continuously, with the exception of a few weeks before her parturition; and not only is she milked, but she is pregnant during the greater part of the time that she is yielding her milk. And so we might go on to enumerate other conditions that have been accounted as causes of the disease in the human subject, and we should find them all at work in the dairy and some of them even intensified in the case of the cow. Therefore is it to be wondered at that the cow is a tuberculous animal? And if the disease is contagious and conveyed from one animal to another, what other animal associated with mankind is more likely to convey to him this fell disease? Man is more closely associated with the dairy cow than with any other of his domestic animals. He drinks her milk and eats her flesh, and if she harbors the germ we can see that every condition in her life and her peculiarly high normal temperature, the degree of which is precisely that required for the propagation of this organism as we understand the life history of the tubercle bacillus, favors its transmission. Is it unnatural to suppose that man becomes infected from this animal? And so one of the apparent reasons why man is afflicted with tuberculosis is found as a consequence of his grave errors in feeding and caring for one of the most useful and numerous of his domesticated animals. Furthermore, I am still convinced of the fact that where the in-bred scrofulous cow exists, there tuberculosis in all its forms prevails among the human race, and where this animal is absent the inhabitants enjoy an immunity.

A NEW EUSTACHIAN ELECTRODE.

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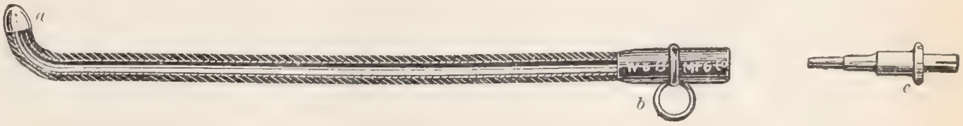
The aphorism, "of making books there is no end," so often flung at aspiring literary genius, finds an analogue in a professional opinion, not perhaps so tersely framed but equally expressive, which asserts that no practitioner rests contented until he has devised an instrument. Under the inspiration of this spirit of discontent I have contrived and for some months used an instrument a description of which is appended.

About a year ago my attention was attracted to a condition existing in certain cases of atrophic rhinitis and pharyngitis which added materially to the discomforts already present with this class of patients; this condition was a Eustachian catarrh which, while manifesting itself in partial deafness, exhibited in addition continuous, most annoying, and in some instances nearly distracting tinnitus aurium. In these cases there was in the Eustachian tube a condition similar to that found in the meatuses of the nose—namely, a wide patulous canal easily inflated by Politzer's air-bag. The use of inflation, however, seemed unattended by benefit as regards amelioration of the distressing noises; nor was there any appreciable improvement following the application of the usual category of remedies advised in such conditions.

Pondering upon the fact that the negative galvanic current produces a localized congestion of any mucous surface to which it is applied, unattended by the formation of cicatricial tissue, it appeared possible that the establishment of such a congestion might perhaps antagonize, or at least retard, the progress of that atrophic process, one manifestation of which was the annoying tinnitus. The question how to establish such a congestion as directly as possible and in the simplest manner arose, the satisfactory solution of which appears in an instrument or electrode, the description of which in appearance and use is here appended.



The instrument is very simple in construction and application. As seen from the cut, it resembles, on superficial inspection, an ordinary Eustachian catheter with a small bulb at the distal and a projecting metal socket for the reception of the connecting battery cord at the proximal end. The electrode really consists of a hollow silver tube terminating in a bulb (*a*) at one end and in an expanded extremity at the other. The tube pierces the bulb so that a current of air can be transmitted through the electrode as through an ordinary catheter, in place of which it can, of course, be used, the object being purely diagnostic; the expanded extremity (*b*) receives the post of the metal socket (*c*), by means of which the contact is made; the whole of this metal skeleton is inclosed in a hard-rubber envelope, giving the completed instrument the appearance of a bulbous Eustachian catheter.

The bulb is made preferably of platinum, which increases slightly the cost of the instrument, but compensates for this by its stability, since it does not, as is the case with nickeled copper, fuse, leaving a deposit of metal about the orifice of the Eustachian tube and on the naso-pharynx if a current of any pronounced intensity is used; no great importance, however, attaches to such an occurrence, and copper may be employed in case cheapness is a desideratum.

The hollow silver tube performs a twofold function, acting primarily as a conductor of the electric current, and secondarily as an air channel, by means of which the Eustachian tube is inflated; it admits as well of easy cleansing in case any mucus or foreign matter shall enter it.

The bulb on the end, the direct means of application of the electricity, offers an advantage in enabling one to strike with greater ease the Eustachian orifice. I have often noticed that while there was considerable difficulty in inflating the tympanum through the ordinary catheter the same procedure was easily accomplished when using the hollow electrode with the round bulb. From this observation the question has arisen in my mind if a spasm of the levator and tensor palati muscles is not excited by the sharp edge of the catheter as ordinarily made, and if this spasm does not, by its sharp contraction, cause a partial closure of the valve-like orifice of the Eustachian tube, rendering an attempt at inflation more or less abortive, while the passage of the bulbous catheter unattended by this irritation finds free admission to the open extremity of the tube.

The application of the instrument is very simple, and, as it is a catheter, is equally exact; its introduction into the naso-pharynx is accomplished after the usual manner employed with the ordinary catheter. The presence in the Eustachian tube is determined by connecting the ear of the operator with that of the patient and sending a blast of air through the catheter so that it is heard through the otoscope. The position of the electrode having then been made certain, the positive pole of the battery is introduced by means of a slender sponge electrode into the external auditory canal and the current applied by putting the metal post of the electrode, constituting the negative pole, into the socket intended for it.

The current, controlled by a water rheostat, is turned on and increased slowly in intensity until a point is reached to go beyond which causes too great discomfort to the patient. This point, I have found, varies considerably in different individuals; as a rule, however, ten cells of the Barrett dry-silver battery are tolerated. This amount is continued for fifteen minutes with an occasional diminution to relieve the patient.

The current causes active effervescence or deoxidation at the negative pole or the extremity of the electrode, which process may be easily observed by applying the pole in the lower meatus of the nose to those turbinated tissues which are anæmic and blanched, appearing oftentimes like adenoid growths. These parts, still retaining their erectile properties on application of the current, display a measurable contraction at the point of contact, and a congestion varying with the intensity of the current in extent and severity radiates thence in all directions.

This congestion is of transient character, lasting but a few hours and unattended by pain, the only subjective symptom being slightly increased secretion of a thin watery nature. As regards the indications for the use of this line of treatment, I have not been able to formulate them with exactness, but have confined its application to those cases in which there was an atrophic (as opposed to hypertrophic) condition of the nasal passages, with accompanying deafness and tinnitus aurium.

Although the improvement in hearing in these cases has not, perhaps, been greater than might be expected to be incident to the usual routine treatment, there has still been in nearly all cases a decided improvement in the distressing tinnitus; and as the relief of this symptom was the principal aim in devising the instrument, I have felt at least justified in its production.

That there has been any appreciable change in the nutrition of the locality which can be demonstrated anatomically, can not be affirmed; but that cases of the variety indicated in which tinnitus of long standing had defied the usual remedies have been decidedly benefited as the result of such treatment, is true.

If then, in even an extremely limited number of cases, the Eustachian electrode will serve to relieve patients of a symptom than which, with the exception of severe physical pain, there is none more distressing, it has accomplished its purpose.

52 East Thirty-first Street.

The Maternity Department of the Jefferson Hospital.—The removal of the Maternity Department of the Jefferson College Hospital from its present location in the old hospital building on Sansom Street, near Eleventh Street, has been decided upon, says the *Medical News*, because its present accommodations are insufficient in extent, and also because such patients are most safely cared for outside of a general hospital, which contains medical and surgical cases. A house has been secured at No. 327 Pine Street, and will shortly be opened, where patients needing such services will be received and cared for. The building is located in a section of the city where no similar non-sectarian hospital exists. Any one needing its care will be received without regard to creed or condition. A resident physician and competent nurses will be in attendance, and nothing will be left undone to promote the comfort of the inmates.

The College of Physicians and Surgeons, Chicago.—Dr. Henry T. Byford has been elected to the chair of gynæcology, to fill the vacancy made by the death of Dr. A. Reeves Jackson.

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A NATIONAL QUARANTINE.

As was expected, the President's message to Congress refers to the arrival of cholera-infected vessels at our ports during the past summer and to the necessity of uniform quarantine regulations. He holds that under the Constitution such regulations are plainly within "exclusive Federal jurisdiction when and so far as Congress shall legislate." He recommends that the whole subject should be taken under national control, and adequate power should be given to the Executive to protect our people against plague invasions. He refers to his approval of a regulation establishing a twenty-day quarantine for all vessels bringing immigrants from foreign ports, to the danger of cholera again appearing during the coming spring, to the necessity of a suitable appropriation for dealing with the disease should it appear, and to the great need of municipal sanitation.

This message was followed in the House by the introduction of a bill, by Mr. Payne, of Maryland, for the better protection of commerce and the general welfare, for the establishment of a national quarantine to prevent the introduction of contagious and infectious diseases into the United States from foreign countries or from one State into another, and to establish a National Bureau of Health within the Treasury Department. This bureau is to consist of a sanitary council composed of an executive commission and an advisory council. The latter is to be made up of the Surgeon-Generals of the Army, Navy, and Marine-Hospital Service and an officer of the Department of Justice. The former is to consist of a commissioner of quarantine, a commissioner of internal sanitation, and a commissioner of vital statistics, each of whom shall receive an annual salary of seven thousand dollars. The Secretary of the Treasury is to designate the time and place for the meeting of the bureau, and it is to perform all the quarantine duties now imposed on the Treasury Department. He is authorized to accept "through such steps as may be legally necessary the possession of all international and inter-State quarantine stations and inspection posts." There are a number of other features in the bill that are similar to those of existing laws governing national quarantine.

This bill, therefore, offers nothing new except the establishment of the bureau of health, and the appointment of three officials at fair salaries. Such officials need not, so far as the bill specifies, be physicians, and the places would probably be the refuge of politicians, while the professional work would have to be performed by the advisory council. Representative Payne has demonstrated his unfamiliarity with the necessities of a national quarantine, and his bill will undoubtedly be relegated to the oblivion that includes the vast majority of bills introduced into the House. The utmost carefulness will be necessary in carrying out the President's recommendations, and it is well that they are not very specific; best of all, they do not include an attempt to resuscitate the old National Board of Health.

ANTIVIVISECTIONISTS IN ENGLAND AND AMERICA.

AT the recent meeting of the American Humane Association, in Philadelphia, the question of vivisection was discussed and a vote on a resolution condemning the practice as commonly performed resulted in a tie, whereupon the president voted against it. A Dr. Leffingwell, of Rochester, then offered as a substitute a resolution urging upon the Legislature of every State in the Union the enactment of laws to prohibit, under severe penalty, the repetition of painful experiments upon animals for the purpose of teaching or demonstrating well-known and accepted facts. This resolution was adopted. The first vote of the meeting saved it from taking an unfortunate step, while the second vote was on a question that assumed the perpetration of painful experiments on living animals.

There is an interesting summary in the *British Medical Journal* for October 8th of the debate at the recent English Church Congress on the question "Do the interests of mankind require experiments on living animals, and, if so, up to what point are they justifiable?" The discussion was begun by reading a telegram from Sir Andrew Clark, in which his strong and unwavering sympathy with experimental research was expressed, as well as his belief that experimental research was not a mere privilege, but a moral duty.

Dr. Samuel Wilks asked whether mankind recognized that animals had rights in the same sense as the term was used in speaking of the relation of man to man. Man employed animals in irksome and painful occupations, and resorted to painful methods to provide food suited to his palate or clothing adapted to his taste, and there was no national conscience as to cruelties of this character. The true foundation of the antivivisection agitation was shown in the speech by the late Cardinal Manning in which he "deplored the science-worship of the present day." It was an offense to kill an animal for scientific purposes, notwithstanding the allegation that the antivivisectionists' opposition was based on the uselessness of the experiments. Upon this latter point those most competent to speak had expressed themselves in the resolutions adopted by the International Medical Congress of 1881, and by the British Medical Association meeting of 1892.

Bishop Barry maintained that in this, as in other subjects, there was a right on the part of the lay as distinguished from scientific experts to express a judgment. Vivisection of animals must lead to the torture of men; at least such was the unhappy direction in which vivisection tended to lead its votaries. This latter argument seems to us to be about as logical as it would be to theorize that partaking of the sacramental wine would lead to wine-bibbing and eventually to drunkenness. He considered that the prolongation of mere physical life was not the highest consideration for man, and that the question was a moral as well as a scientific one.

Professor Victor Horsley made a forcible address in which he referred to Bishop Barry's allusions to the scientific work of honorable men as "a moral offense," "cruelty," and "demoralization," and also to Canon Wilberforce's epithet of "inhuman devils" for men of whom he knew nothing, and his stigmatizing as "abominable sin" that experimental research of which he was utterly ignorant. Professor Horsley showed that Miss Cobbe's book, on which the reverend gentlemen had relied for their statistics, contained false and misleading statements regarding the omission of anæsthetics in experiments on animals.

The Bishop of Manchester said, with rare perspicacity, that men who practiced vivisection must become callous to suffering; if man, by the law of evolution, should in the future become as high above the present man as man was now above the anthropoid apes, then some day these vivisectionists might be experimented on by this higher race! He felt sure that if Miss Cobbe had made false representations she would undoubtedly apologize.

This sickening mediæval narrowness was not universal in the congress, and we are glad that we can not call it theological narrowness, for the Bishop of Edinburgh said that he had listened with the greatest indignation to the views expressed by Bishop Barry, whose opinions as to experimentalists were not charitable or founded on fact. Knowledge was worth any amount of speculation, and it must not go forth to the world that the Church adopted the opinion on this question promulgated by Bishop Barry and the Bishop of Manchester.

The theology of the Bishop of Edinburgh seems to be of the same wholesome character as that of our Episcopal Bishop of New York, who, in a recent address regarding special prayers for the prevention of a cholera epidemic, stated that, before the prayers, attention to placing a locality in a proper sanitary condition was the essential requisite.

The antivivisectionists might recall, in their yearning for applied morality, that, as the Lord said that the Sabbath was made for man, not man for the Sabbath, so it might be said that animals were made for man, not man for animals.

This Miss Cobbe, we are informed in a later issue of the *British Medical Journal*, who, during a number of years and in various publications, brought a series of vile accusations against the most eminent scientific men of the day, some for performing and others for countenancing vivisection, has served as the purveyor of the facts upon which the antivivisectionists based their abuse. Professor Horsley's exposition that she had repeatedly and fraudulently omitted to state that morphine and chloroform were administered before performing the experiments has served to throw the person into such a condition that her lacerated feelings will not allow of her making any reply or of retracting the falsehoods that, the *British Medical Journal* states, are falsehoods whether described in words of English or of Latin origin.

Mr. Lawson Tait has entered the lists with a challenge to Sir Andrew Clark, Sir James Paget, and others "to a public slinging match before an unqualified and uninformed public." The journal referred to has not been excessively severe in characterizing this as "strange witlessness and a want of good taste."

It seems unfortunate that, where there is so much room for the expenditure of superfluous energy, instead of bettering mankind this energy is directed to the abuse of those engaged in work tending to that end. Truly we believe that he that has gone to South Africa to unravel the significance of the vocal utterances of monkeys is engaged in more useful work. Possibly the antivivisectionist is of an atavistic type that properly belongs to India; he is certainly worthy of psychological study.

MINOR PARAGRAPHS.

WRINKLES AS INDICATORS OF AGE.

In a certain town in the South, where "Judges" form a large part of the population, there was an elderly gentleman, familiarly known as "Judge" ——, who, for reasons best known to himself, was quite averse to telling his age. His friends and acquaintances tried many devices in the effort to ascertain how old the "Judge" was, but to no purpose. Finally his physician, who was occasionally called upon to treat the "Judge" for hæmorrhoids, from which he was a great sufferer, thought of a plan by which the desired information could be obtained, and on the occasion of his next visit proceeded to put it into effect. Placing his patient in the proper position for an examination, he said: "'Judge,' I have recently learned of two methods for the effectual relief of piles; but both are dependent for their results upon the age of the patient, one being adapted to persons in youth, the other to those who have passed middle life. Now, in order to apply the proper treatment in your case, it is essential that I know how old you are." The "Judge," directing a knowing look into the eyes of his questioner, replied: "Count the wrinkles, doctor; count the wrinkles."

GASTRODIAPHANOSCOPY.

At a meeting of the New York Post-graduate Clinical Society held last Saturday evening, Dr. Max Einhorn read an interesting paper on Enteroptosis, or Glénard's Disease. After a clear exposition of Glénard's views, Dr. Einhorn demonstrated by means of the gastrodiaphane some of the conditions found in the disease. Several patients were shown who were suffering from gastroptosis, with or without dilatation. The luminous outlines of the stomach made very evident any changes in its size, shape, or position. Dr. Einhorn did not indorse all of Glénard's statements, but believed in giving him credit for calling attention to the condition of enteroptosis, whether his explanations of that condition were correct or not. Several writers in France, Ewald and Virchow in Germany, and Sansoni in Italy have published articles on the subject, agreeing in the main with Glénard's views. In England and America, however, we can recall no mention of the disease in a periodical previous to this paper of Dr. Einhorn's.

LARGE DOSES OF PARALDEHYDE.

At a meeting of the New York Neurological Society held on Tuesday evening, the 6th inst., Dr. William D. Granger, of Mount Vernon, reported a case of insanity in which enormous doses of paraldehyde had been given, often to the extent of ten drachms during the night, and without bad effect. Dr. Frederick Peterson mentioned a case of paraldehyde habit which had come under his observation in which a woman had taken ounce doses nightly for months without deleterious effects, and in fact had grown fat upon it. Dr. Charles L. Dana had seen bad effects from two-drachm doses taken for the first time, and advised never beginning with more than a drachm at a dose.

THE NEW VOLUME OF THE INDEX-CATALOGUE.

The thirteenth volume of the *Index-catalogue of the Library of the Surgeon-General's Office, United States Army*, brings that stupendous work well on toward its close; the vocabulary is advanced to the word *Sutugin*. The volume opens with the sixth additional list of abbreviations of titles of periodicals, occupying sixteen pages, and then the vocabulary is continued in the same thorough and painstaking way that has been followed in the preceding volumes.

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending December 6, 1892:

DISEASES.	Week ending Nov. 29.		Week ending Dec. 6.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	0	0	2	1
Typhoid fever	16	6	17	7
Scarlet fever	81	10	112	13
Cerebro-spinal meningitis	1	1	0	0
Measles	82	6	61	11
Diphtheria	97	35	92	26
Small-pox	4	1	4	1

The New York Academy of Medicine.—Dr. Thomas H. Manley informs us that the subject of his paper to be read before the Section in Genito-urinary Surgery at the meeting of Thursday evening, the 8th inst., was incorrectly announced, and that the title should have been Urethrotomy, Partial or Complete, as a Method for the Radical Treatment of Rupture of the Urethra, Fistula, and Organic Stricture.

The Section in Public Health, etc., of the New York Academy of Medicine.—At the December meeting Dr. S. T. Armstrong was elected chairman and Dr. Frederic H. Dillingham secretary for the ensuing year.

Billroth's Surgical Clinic.—A photolithograph bearing this title has been published by Messrs. William Wood & Co. It belongs to a series of pictures for physicians' offices, and will be very interesting to those who have studied under the eminent professor.

The New York Academy of Anthropology.—At the meeting of Tuesday afternoon, the 6th inst., at Mott Memorial Hall, a lecture by Dr. William M. McLaury was the special order, on the subject of The Antiquity of Man and his First Home, the Origin of Man, and the Influence of Man's Environment.

A Medical Centenarian.—The death of Dr. Enoch Fithian, of Bridgeton, N. J., on November 15th, removes the oldest living medical graduate, as he was reported to be, of the University of Pennsylvania, from which institution he received his diploma in medicine in 1815. He was born in May, 1792.

The Death of Dr. James Roseburgh Leaming took place at his home in New York, on Monday, the 5th inst., in the seventy-third year of his age. For many years Dr. Leaming had been highly esteemed as a general practitioner and credited with great skill in auscultation and percussion. He entertained original views of the mechanism of certain auscultatory sounds, and upheld those views with great ingenuity. He was a man for whom his professional brethren felt an affectionate regard.

The Death of Dr. George Ross, of Montreal, professor of medicine in McGill University and senior editor of the *Montreal Medical Journal*, is announced in the last issue of that journal. Dr. Ross was president of the Canadian Medical Association in 1888.

The Hospital Graduates' Club.—Officers for the ensuing year were recently elected as follows: President, Dr. Nelson H. Henry; vice-president and treasurer, Dr. I. I. Janeway; secretary, Dr. F. A. Manning; trustees, Dr. H. O. Norris and Dr. Alexander Duane.

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from November 20 to December 3, 1892:*

Glennan, James D., First Lieutenant and Assistant Surgeon, is granted leave of absence for one month.

Happersett, John C. G., Major and Surgeon, is granted leave of absence for one month, on surgeon's certificate of disability, with permission to leave the limits of the department.

Crampton, L. W., Captain and Assistant Surgeon, is granted leave of absence for one month, with permission to apply for an extension of three months.

A board of officers, to consist of Smith, Joseph R., Colonel and Assistant Surgeon General, Huntington, David L., Major and Surgeon, and Pope, Benjamin F., Major and Surgeon, is, by direction of the President, appointed to meet at Whipple Barracks, Arizona, on Monday, November 28, 1892, or as soon thereafter as practicable, for the examination of Maus, Louis M., Captain and Assistant Surgeon, with a view to determining his fitness for promotion, as contemplated by the act of Congress approved October 1, 1890.

Skinner, John O., Major and Surgeon. The leave of absence granted on account of sickness is extended six months.

Birmingham, Henry P., Captain and Assistant Surgeon, is relieved from duty at Boise Barracks, Idaho, to take effect upon the expiration of his present leave of absence, and will then report in person to the commanding officer, Fort Grant, Arizona Territory, for duty at that post.

By direction of the Secretary of War, Paragraph 3 of Special Orders No. 232, October 3, 1892, from this office, directing O'Reilly, Robert M., Major and Surgeon, to report for duty as attending surgeon in this city on December 15, 1892, is amended to direct him to so report on January 15, 1893.

Swift, Eugene L., Captain and Assistant Surgeon. The ordinary leave of absence granted is changed to leave of absence on surgeon's certificate of disability, and extended as such two months.

Dunlop, Samuel R., First Lieutenant and Assistant Surgeon. The extension of leave of absence granted is further extended one month.

So much of Par. 2, S. O. 232, A. G. O., October 3, 1892, as directs Powell, Junius L., Captain and Assistant Surgeon, to repair to Fort Monroe, Virginia, for duty at that post, is revoked, and he will, upon the final abandonment of Fort Randall, South Dakota, report in person to the commanding officer, Jackson Barracks, Louisiana, for duty at that post, relieving Borden, William C., Captain and Assistant Surgeon. Captain Borden, on being relieved by Captain Powell, will report in person to the commanding officer, Fort Adams, Rhode Island, for duty at that post.

Gardner, William H., Major and Surgeon, is relieved from further duty at Angel Island, California, and will report in person to the commanding officer, Fort Keogh, Montana, for duty at that post.

Society Meetings for the Coming Week:

Monday, *December 12th:* New York Academy of Medicine (Section in General Surgery); Lenox Medical and Surgical Society (private); New York Ophthalmological Society (private); New York Medico-historical Society (private); New York Academy of Sciences (Section in Chemistry and Technology); Boston Society for Medical Improvement; Gynæcological Society of Boston; Burlington, Vt., Medical and Surgical Club; Norwalk, Conn., Medical Society (private); Baltimore Medical Association.

Tuesday, *December 13th:* New York Medical Union (private); Kings County, N. Y., Medical Association; Medical Societies of the Counties of Chemung (quarterly—Elmira), Oswego (semi-annual—Oswego), Rensselaer, and Ulster (quarterly), N. Y.; Newark, N. J., and Trenton (private), N. J., Medical Associations; Morris, N. J., County Medical Society (semi-annual); Baltimore Gynæcological and Obstetrical Society.

Wednesday, *December 14th:* New York Surgical Society; New York Pathological Society; American Microscopical Society of the City of New York; Medical Societies of the Counties of Albany, Cayuga (semi-annual), Cortlandt (semi-annual), and Montgomery (quarterly), N. Y.; Pittsfield, Mass., Medical Association (private); Philadelphia County Medical Society.

Thursday, *December 15th:* New York Academy of Medicine; Brooklyn Surgical Society; New Bedford, Mass., Society for Medical Improvement (private).

Friday, *December 16th:* New York Academy of Medicine (Section in Orthopædic Surgery); Baltimore Clinical Society; Chicago Gynæcological Society.

Saturday, *December 17th:* Clinical Society of the New York Post-graduate Medical School and Hospital.

Letters to the Editor.

PAPER-RAGS AND CHOLERA INFECTION.

20 East Twenty-ninth Street, *December 3, 1892.*

To the Editor of the New York Medical Journal:

Sir: "There are none so blind as those that will not see," and I fear my attempt to convince Mr. Augustine Smith, the champion of the rag industry, is a hopeless task. His reference to Dr. Woodworth's report is woefully disingenuous, for the allusion to merchandise in general, which I in part agree with, does not apply to the case in hand, and I am sure Mr. Smith must know this. If this gentleman will turn to page 47 of the *Report of the Cholera Epidemic of 1873 in the United States* (Government Printing Office, 1875), he will find that Dr. Woodworth settles the question by the following: "Proposition III. That cholera dejecta coming in contact with and drying upon any objects, such as articles of clothing, bedding, and furniture, will retain indefinitely their power of infection. That in this manner a sure transmissibility of the cholera infection is effected, and that a distinct outbreak of the disease may occur by such means at great distances from the seat of original infection." In proof of this proposition the reporter brings forward "positive and conclusive evidence," citing three instances where cholera appeared at remote points from the Atlantic seaboard. Had the wearing apparel or other textile fabrics that carried the disease been packed in bales or more fully protected from direct atmospheric influences or extremes of temperature, the potency of infection would have been far greater.

Now it seems to me that, after all, the question narrows itself down into "What are rags?" and I take pleasure in referring Mr. Smith to *The Century Dictionary*, the newest of all, where about half a page (vol. v, p. 4937) is devoted to the various definitions; but I select the following, which I think will do: "5. A worn, torn, or mean garment; in the plural, shabby or worn-out clothes, showing rents and patches."

Any further discussion of the subject must degenerate into mere quibbling. So I shall make no attempt to accept the challenge or hunt up cases, except to say that I have perfectly satisfactory information that small-pox has appeared in American towns in which paper mills were situated, when it could only be traced to rags, and there is not the least earthly doubt but that under proper conditions the same thing could occur in a cholera season, even though the comma bacillus is much less tenacious than the infecting material of variola. If, as Mr. Smith says, it has not, it is simply because the disinfection (whether corrupt or honest) of rags in bales from infected ports has gone on despite the mercenary opposition of those who have the temerity to trifle with the public health.

Allan McLane Hamilton, M. D.

Proceedings of Societies.

NEW YORK NEUROLOGICAL SOCIETY.

Meeting of Tuesday, November 1, 1892.

Extraction of Teeth for Trigeminal Neuralgia.—Dr. M. Allen Starr presented two teeth extracted from the jaw of a patient who had suffered from trigeminal neuralgia. There was marked exostosis of the roots of the teeth, and their extraction had resulted in a complete cure of the neuralgia.

Spasmodic Wryneck.—Dr. J. A. Booth presented the case of a married woman, twenty-six years old, whose general health had been fair up to the time of the present trouble. There was no history of rheumatism or malarial infection. During the early part of last May the patient had a miscarriage and was quite weak after this for some time. Her menses had not appeared since the 12th of June, and she was now in the fourth month of pregnancy. Her present trouble had appeared in June, and begun with severe pain in the back of the head and a spasmodic turning of the head over the left shoulder. The pain gradually disappeared, but the other conditions grew worse. There was a more or less tonic contraction of the right sterno-cleido-mastoid and trapezius muscles. Examination failed to reveal any other nervous lesion. The right sterno-cleido-mastoid was very much hypertrophied. The treatment thus far had consisted of daily hypodermic injections of atropine sulphate, according to the plan advised by Dr. Leszynsky. The patient had been under observation for only a few days, and no improvement in her condition had yet been observed.

Dr. W. M. Leszynsky said that in a case very similar he had given atropine injections and the patient had got well. In that case he had carried the dose up to a sixth of a grain before marked improvement had followed. The patient was kept under continual observation and the dose was rapidly increased.

Dr. G. M. Hammond said that the majority of these cases were very difficult to cure. He had seen a number which had appeared to him to be psychical in their nature. Some of these patients had seemed to derive much benefit from fluid extract of conium, given in large doses.

Dr. Starr confirmed the statement that conium had a decided effect in some of these cases. In one case that had come under his observation the spasmodic action of the muscles had been quieted by pressing upon a certain point on the back of the skull. Dr. Shaffer had devised a very ingenious mechanical contrivance by means of which the patient, by a movement of the arm, could bring pressure to bear on this point on the skull, and at the end of six months he was perfectly well. This case had appeared to be psychical in its nature, as mentioned by Dr. Hammond. So far as atropine was concerned, the speaker had employed it in one case, carrying the dose up as high as he had dared, but no benefit had followed.

Dr. E. D. Fisher said that the only thing he had found to be of any value in these cases was either some form of mechanical treatment, getting the parts into as comfortable an attitude as possible, or the galvanic current, which gave relief to some extent. Where the cases were acute, he believed there was a nervous element in them, and sometimes patients got well under the use of injections of atropine. Where they did not get well, he was rather inclined to try operative procedures. An operation, however, should be considered as a last resort.

Spinal Paralysis attributed to Hæmorrhage.—Dr. Joseph Collins presented the case of an Irishman, forty-seven years old, who had always been in fairly good health until eight or ten weeks ago. He had formerly been employed in the English mines, working in compressed air. Ten weeks ago he suddenly lost the power of all parts of his body, excepting his head, but did not lose consciousness. He remained in this condition for four weeks, being unable to move his hands or his feet or to do the least thing to help himself. At that time he also suffered greatly from pain, which he described as a burning or scorching pain. At the end of four weeks he was able to walk about a little. The right side of his body improved more rapidly than the left. At the time of the attack he also had some trouble with his sphincter muscles. At present only the vaso motor symptoms were left. The speaker thought the case was one of hæmorrhage into the spinal cord.

Dr. Leszynsky said he had seen the patient presented by Dr. Collins, but had not examined him. From the history given, he could not agree to Dr. Collins's diagnosis. He had seen two or three cases of hæmorrhage into the cervical portion of the cord, and in those cases the paralysis had come on suddenly and the patients had been left with some atrophy. The history of this case seemed to point to multiple neuritis.

Dr. Fisher referred to the fact that men who worked in places where there was considerable atmospheric pressure sometimes became affected with symptoms like those in Dr. Collins's case. He had recently seen a diver who stated that not infrequently men in his class of work became paralyzed for four or five days or a week, and then recovered. He had had two or three such attacks within the past twenty years.

A Supposed Hysterical Abnormity of Speech.—Dr. G. M. Hammond presented a man whose family history was unimportant, except that his father had been a dipsomaniac. The patient himself had formerly been a hard drinker. From the time of his marriage, eight years ago, he had indulged excessively in sexual intercourse, usually performing the act daily. He contracted syphilis about twelve years ago. Early in 1891 he began to suffer from severe and continuous occipital headache; this pain afterward left the back of his head and appeared in the forehead. In the fall of 1891 complete ptosis of the left eyelid suddenly occurred. With the advent of the ptosist he headache disappeared and had never returned. He had now no double vision, although the muscles of the orbit supplied by the third nerve were all paralyzed. The fourth and sixth nerves were not affected. The third-nerve paralysis had been partially recovered from, but there was still slight ptosis with paresis of the superior and inferior recti muscles. Vision in the left eye had gradually failed, and an ophthalmoscopic examination revealed evidence of gray degeneration of the left optic nerve. In March, 1892, the man was suddenly taken with a peculiar affection of speech. There was no aphasia in the proper acceptation of that term. He could read and write, comprehended all that he saw and heard, and expressed his ideas and words in logical sequence. The peculiarity of speech consisted in the explosive way in which the words were delivered and the rapidity with which the sounds were uttered. One word followed another so closely that the full time was not given for the proper enunciation of each syllable. The words were therefore clipped, and the syllables were "jerked out" as if from a machine. This form of speech, the speaker said, differed entirely from stammering and from stuttering. The former was caused by a spastic spasm of the muscles of respiration, while stuttering was caused by mobile spasm of the lips and tongue. At the time this man's change of speech came on, he also had difficulty in walking; he walked like a drunken man, and this still persisted to a certain extent. During the past eight months he had been strictly temperate. He had been under treatment for several months, receiving as high as one hundred and thirty-five drops of a saturated solution of potassium iodide three times daily, together with small doses of bichloride of mercury, but this had not improved his condition at all. Recently he had been troubled with insomnia, disagreeable dreams, and depression of spirits. As to the diagnosis, the speaker did not think the change in the man's speech was due to any physical lesion. He knew of no physical lesion that would bring about such a condition. He considered it a psychical condition of an hysterical nature.

A Study of Some of the Drugs used in Functional Nervous Disorders.—Dr. Arthur A. Boyer read a paper on this subject. He stated that in the treatment of functional nervous disorders, as in other fields, there was a great temptation to secure rapid and striking results, and that on this account there was a disposition to give secondary consideration to the means employed, and too often to forget the rigid scrutiny to which they should be subjected. There were two things that impressed the student of therapeutics as applied to functional nervous disorders: 1. The necessity of pushing the use of familiar drugs to their physiological limits. 2. The large number of new drugs reported as accomplishing startling results without a sequence of dangerous or unpleasant symptoms. It was not unreasonable to suspect that such reports were based on insufficient data, and that better acquaintance with these drugs would reveal elements no less dangerous because insidious.

The first drugs referred to were those used in chorea, and foremost among them was arsenic. There was a large class of patients who had been taking moderately small doses of arsenic, and who bore characteristic marks of their treatment. The skin was pale, often sallow to the point of muddiness; the air was languid; the gait was rather uncertain; the hands were moist; the flesh was flabby; the appetite was poor; there was constipation; the heart's action was feeble, frequently accompanied by palpitation or irregularity; the pulse was soft; and respiration was shallow. Examination of the muscular system revealed a lack of tone. In general, the patient's condition was what might be called below par. Mr. Jonathan Hutchinson had, in several of his monographs, called attention to the harmful effects of the long-continued use of the drug. The probable action of arsenic was twofold: primarily, a depression of the spinal centers by reason of the poverty of the blood; in the second place, and to a much lesser degree, a reduction of the working power of the muscles by the direct effect of the drug.

The next drug referred to was chloral. The cases of chorea in which it had proved of most value were those of the acute and violent form, where an immediate cessation of spasm was requisite to the safety of the patient. The theory for its use was that in sleep choreic movements usually ceased. Chloral was called a pure hypnotic. The large amount of it required in such and similar cases, however, to produce sleep certainly created a doubt whether the effect was produced as much by its hypnotic action as by the profound depression of the brain and spinal centers and a direct action on the muscles themselves. As to the use of antipyretics, such as antipyrine, phenacetine, and exalgine, in chorea, they, as well as all other drugs that had won a reputation in the treatment of chorea, possessed as their most prominent feature the power to cause a depression of sensation and motion to the point of paralysis; in doses short of this effect they were not of much value, and when they were administered in doses sufficient to check choreic movements, other systemic effects—such as general depletion of the forces of the body, vascular dilatation, and cardiac and respiratory depression—attended their specific action.

The author next referred to the treatment of insomnia. The drugs that had proved most efficacious in producing sleep, he said, were chloral and sulphonal. The large number of persons suffering from insomnia who found their way to the specialist demonstrated only too frequently the failure of the hypnotics to accomplish what had been expected of them. These persons were of two classes: those who were taking chloral and sulphonal, yet could not sleep; and those who slept when they took the drug, but consulted the physician for "extreme nervousness." These people had certain traits in common. The first things that attracted one's attention were the hard, set features, the fixed look, the dull, heavy eyes, often congested, the dusky pallor of the complexion, and the expression of despair. The face never relaxed into a smile. The patient walked as if in a trance, and talked in an automatic manner. The mental condition differed somewhat in those using chloral and those using sulphonal. In the former there was more excitement, with irritability; in the latter more despair. In some cases trembling was observed. Chloral had also a peculiar effect on the ocular muscles, disturbing their proper relations to each other. Daily contact with patients who had been taking chloral and sulphonal for insomnia had forced upon the author conclusions that were far from supporting the flattering opinions commonly expressed on the subject. A large number of patients who presented themselves for treatment would be found to be suffering as much from the drugs they had been taking as from the original disorder, and an absolute disuse of all drugs would serve not only to elucidate the condition, but frequently also to give much relief to the sufferer.

Dr. C. A. Herter thought arsenic acted upon the nutrition of choreic patients rather differently than had been expressed in Dr. Boyer's paper. In studying a good many grave cases of chorea it had been found that the quantity of uric acid excreted was very much increased. A peculiar reddish coloring matter was also found in the urine. In the course of treatment of chorea by arsenic the uric acid was very much diminished and the patients recovered. The antipyretics also reduced the excretion of uric acid, and they did so in doses that were far from being toxic. The speaker thought Dr. Boyer had been rather extreme in his condemnation of the drugs named.

Dr. George W. Jacoby agreed with Dr. Boyer as to the necessity of using the drugs mentioned by him with a certain amount of judgment. In regard to the statement made by Dr. Boyer that arsenic had been known to produce multiple neuritis, he would like to know how many cases of that disease caused by medicinal doses of arsenic had come under the observation of the members present. He considered Dr. Boyer's paper too sweeping.

Dr. C. H. Brown considered arsenic one of the best remedies at our command. In chorea it was extremely useful, and he had never seen it do any harm. As for chloral, it was a dangerous drug, but so was opium; and to say that it was not valuable in functional nervous diseases was going very far indeed. The speaker did not use chloral much now, since we had sulphonal and chloralamide, but he still employed it occasionally, and had never seen any injurious effects from it.

Dr. Starr said he had been unfortunate enough to produce multiple neuritis with arsenic in two instances, but he had given the drug quite continuously and thoroughly in four hundred and twenty cases of chorea, so the proportion was small. He considered the warning contained in Dr. Boyer's paper a timely one. We were too apt to overlook the effects of drugs, and give them as a matter of routine. Still, it seemed to him that many of the symptoms ascribed by Dr. Boyer to arsenic were chiefly those of the chorea itself, and were due to the disturbed nutrition, the anæmia, etc., which underlay the choreic manifestations.

Dr. Collins was rather inclined to think that Dr. Boyer had not taken a pessimistic view of this subject, but that some of the members had misunderstood the spirit of his paper. In Europe, particularly in Germany and England, where these synthetical drugs were much more largely employed than here, the proportion of cases in which injurious effects had followed their use was by no means small. Dr. Boyer had, perhaps, overrated the poisonous effects of some of the drugs, but his warning had come in good time.

Dr. Boyer said he was sorry to see that the general impression created by his paper was that he wished to advocate the withdrawal of all drugs from use. The purpose had been rather to study the mode of action of certain drugs as applied to special disorders, and in the manner commonly employed in such cases, and to suggest a more careful examination into the action of some of the newer drugs. Dr. Herter had been quite correct in his remarks concerning the decrease of uric acid after the administration of arsenic in small doses and for a short time. Replying to Dr. Starr's objection that the symptoms attributed to the drug might have been mistaken for the symptoms of the disease, Dr. Boyer said that his statements had been the result of observations on cases in his practice.

Hysteria following Cerebral Injury.—Dr. Leszynsky presented a girl, eighteen years old, who, when about four years of age, had fallen to the pavement from a fourth-story window and been taken to Bellevue Hospital, where she remained for seven weeks. She was unconscious for two weeks following the fall. Since the time of the accident she had been weak on the right side, and until her eleventh year had been unable to grasp and hold objects with her right hand. Until her fourteenth year she had suffered from epileptic attacks, from two to five daily. There was right hemianæsthesia, also slight hemiparesis on the same side. She stated that she had occasional falling spells, and complained of deafness in the right ear. There was a large opening in the skull over the left parietal bone, extending to the median line. She was now well nourished and healthy-looking. There was complete flaccid paralysis of the right upper extremity, with paresis of the right lower extremity. Faradaic irritability was normal. There was some evidence of right facial paresis. There was absolute right hemianæsthesia, involving the face, cornea, tongue, and mucous membrane. There was no marked atrophy of muscles. The knee-jerks and other reflexes were normal. There was no spinal or ovarian tenderness. Both pupils were normal in size and reaction. There was loss of taste on the right side; the smell had not been tested. The hearing on that side was also much impaired. The speaker had employed copper plates over the right arm, leaving them on for forty-eight hours, but without any effect. The question arose in this case, he said, as to how many of these symptoms were organic and how many functional. The character of the paralysis on the right side would exclude the ordinary form of hemiplegia. The fact that there was evidence of facial paresis would show that it was organic to some extent. The later attacks had undoubtedly been hysterical in character. The opening in the skull was really the most interesting feature in the case. As a matter of course, one would assume that she had been trephined, but such was not the case. It had been learned that no operation was done on the skull, and Dr. Abbe had confirmed this after a careful examination. The question arose as to whether this cavity was not due to bone absorption caused by obliteration of the nutrient artery at the time of the accident. He could find no mention in any work on anatomy of a nutrient artery to the parietal bone, although no doubt such an artery existed. The cavity might also have been due to a cyst, although there was no evidence of it. The speaker's diagnosis of the case was hysteria ingrafted upon the results of injury to the brain.

Dr. Jacoby had seen Dr. Leszynsky's patient a number of times. He had, however, obtained from her an entirely different history, according to which she had been subject to convulsions before she fell out of the window. He supposed at that time that it was a case of infantile convulsions, and that the other symptoms were due to hysteria. The cavity in the skull, he thought, was due to a cystic growth, which had produced a wasting of the upper part of the bone.

Dr. C. L. Dana also had seen the patient, but had never made a positive diagnosis, on account of the unreliability of the girl's early history. He thought Dr. Leszynsky deserved a good deal of credit for going into the case so thoroughly, and he considered his diagnosis, in which Dr. Jacoby concurred, to be correct.

The Nervous Origin of Jaundice.—Dr. A. D. Rockwell read a paper on this subject. He said it was a well-known fact that disturbance of the brain, both organic and functional, might very seriously interfere with the functional activity of distant organs. A cerebral disturbance might be the direct causative factor of very persistent derangements of the sexual apparatus; the bladder, intestines, stomach, and heart might also be disordered by diseases of the central nervous system, as well as the kidney and the liver. So closely and so strangely were the vascular and the general nervous systems related to each other that their pathological conditions were often inseparably connected. The nervous system had an alliance so close with the functional activity of the secretory and excretory glands of the body that emotional disturbances, according to their character, acted as depressents or excitants of the functional life of these organs. Some of the more common of these effects were every-day familiar facts, as when the flow of tears was excited by grief, or the secretion of saliva and gastric juice by the smell of food. In the same manner as the superficial glands were easily influenced, so, in all probability, were the blood-making or ductless glands regulated and controlled by the organic nervous system. Dr. Murchison, to whom the world was much indebted for enlightenment on this subject, had asserted not only that was the secretion of bile interfered with by prolonged mental anxiety, worry, and incessant mental exertion, but that sanguification and the blood changes in which the liver took part were frequently deranged from these same causes. Acute atrophy, in which the secreting cells were rapidly disintegrated and the functions of the organ arrested, appeared in many instances to have a purely nervous origin; and very often the first symptoms of the disease occurred immediately after a severe fright or an outburst of passion in a person previously healthy. An impression made upon the brain appeared to be reflected to the liver and to derange its nutrition. Even cancer of the liver appeared sometimes to result from the functional derangement induced in the first instance by mental trouble.

The author had had occasion to see and treat a considerable number of cases of jaundice dependent upon a great variety of causes, and he had been impressed with the frequent occurrence of cases due to deranged innervation, interfering with the normal metamorphosis of the bile. According to his experience, there was little to distinguish jaundice resulting from purely nervous agencies and jaundice from the various other non-mechanical causes, unless it was the more sudden onset of the discoloration in the former class of cases. A thorough history of the case would, however, generally enable one to determine whether the exciting cause was of a nervous or a non-nervous character. He then gave the history of three cases of jaundice of distinctly neurotic origin that had come under his own observation. In conclusion, he referred to the striking similarity of the symptoms of neurasthenia to some of the manifestations of lithæmia, and mentioned the more prominent points of difference between the two conditions.

Dr. Herter had been much interested in Dr. Rockwell's paper. An explanation, he said, had occurred to him regarding the intimate relations between certain nervous conditions and disorders of the liver. In cases where jaundice followed a mental shock there might be a very general relaxation of the blood-vessels throughout the body, and especially in the liver. In hysterical and neurasthenic cases one could, by hypnotic suggestion, produce local conditions which depended upon a great dilatation of the vessels. If this did happen in the liver, it lowered the arterial tension in those vessels, and thus might permit the flow of bile into the smaller blood-vessels. Normally, the pressure is greater in the blood-vessels than in the bile-ducts. When this order of things was reversed, however, the bile was taken up by the blood and jaundice would result.

Dr. William A. Granger related a case in which jaundice had been associated with decided mental disorder. The question at that time had arisen whether the mental disturbance might not, in a measure, be due to the jaundice. The question had been answered, however, by the patient's recovering from this attack and having a subsequent attack of mental trouble without any disorder of the liver.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

Fourteenth Annual Congress, held at Boston on Monday, Tuesday, and Wednesday, June 20, 21, and 22, 1892.

The President, Dr. S. W. Langmaid, of Boston, in the Chair.

(*Continued from page 639.*)

Some Pathological Conditions of the Upper Air Passages accompanying "La Grippe" Attacks.—Dr. S. H. Chapman, of New Haven, read a paper on this subject. (See page 648.)

Dr. Beverley Robinson, of New York: Some weeks ago I tried to put in shape what I might have observed of the local manifestations of grippe in the upper air passages, and I found that personally I had not encountered certain things which have been mentioned by some authors, among them two referred to by Dr. Chapman—namely, a localized fibrinous membrane in the larynx and a local œdema, at least not of so pronounced a type as to attract particular attention. But this negative experience only goes to impress upon one how limited is his individual horizon. We all have our peculiar experience, and this experience may not tally at all with that of others. While looking for the things to which Dr. Chapman refers during several winters, both in a throat hospital and in a general hospital, I have not yet encountered them. I have seen some curious hæmorrhagic manifestations; some spitting of blood, for instance, which I thought came, in all probability, from the larynx or just below it, and in one instance at least there was hæmorrhage from the soft palate, which was the seat of large petechial spots which led me to suppose there was probably a similar condition of the mucous membrane below. While there may be some analogy between grippe and cerebro-spinal meningitis, yet, judging by the limited experience which I have had with the latter disease, no direct relationship between the two has at all seemed apparent.

Dr. J. C. Mulhall, of St. Louis: At the first visitation of *la grippe* at St. Louis three years ago I saw my first case of membranous laryngitis complicating this disease in a man sixty-two years of age, and, of course, was much astonished. The man had for two weeks kept one position in a chair, with his arms over his back, coughing almost incessantly. He could not lie down, because in the recumbent position the cough was rendered worse, and as it was it had almost succeeded in killing him. He had been an old bronchitic, and the physicians who had attended him thought the cough was due to some condition of the lungs, as over them they heard certain physical signs. The laryngoscope revealed a distinct membrane in the larynx, non-diphtheritic in character. At that time it did not occur to me what was its real nature, but later it became evident that it was one of the complications of *la grippe.* I cauterized it with nitrate of silver, which seemed to arrest the disease and relieve the cough so that he was enabled to lie down, and after three or four hours the œdema disappeared from the larynx. This same person had another distinct attack the past winter, with the same membranous laryngitis, puffy condition of the mucous membrane, and hæmorrhagic specks at the outlying edge. I have seen quite a number of cases of membranous pharyngitis from influenza, and I therefore see no reason why membranous laryngitis might not occur. At the Climatological Association last year I made the statement that, according to my experience, *la grippe* seemed to have the faculty of awakening old dormant pathological processes, and I mentioned two or three cases in illustration. It seems self-evident that an attack of grippe must be modified in its course to some degree by antecedent pathological conditions. The paper just read gives some of those peculiar manifestations of this disease as modified by previous pathological conditions.

Dr. H. L. Swain, of New Haven: Being in the same provincial town as Dr. Chapman, it may be of interest to state that I have had one case somewhat similar to those he has related in which a membrane formed in the larynx. In several others as well as in this one the face and ear were the seat of a number of vesicles. In the case in which the membrane formed, the vesicles were present in the external auditory meatus and on the face in the line of one branch of the fifth nerve, in the latter locality passing into blebs. The tongue was also swollen and had numerous ulcerations. Several times there were slight hæmorrhages which came from varices at the base of the tongue. The membranous condition in the larynx resembled that sometimes seen following the use of Koch's "lymph." The larynx cleared up in a very few days.

Dr. Chapman: As you will see by the title of my paper, I spoke of pathological conditions coincident with an attack of *la grippe;* perhaps I should have said *unusual* pathological conditions, and I took pains to select cases that had been under observation for some time, and to show some of the more curious conditions. The character of my practice enables me to keep under observation for many years a good many cases, and therefore when other diseases spring up it gives me an opportunity to observe their modification by the old disease or the effect upon this of the new process. What I have related consists really of old pathological conditions which have been revived or aggravated by an attack of influenza. I used the term laryngitis membranosa, or crouposa, because I knew not what else to call it. Unlike a diphtheritic membrane, this membrane was exfoliated without any apparent loss of tissue or harm to the laryngeal mucous membrane.

(*To be continued.*)

Book Notices.

Tuberculosis of Bones and Joints. By N. Senn, M. D., Ph. D., Chicago, Professor of Practice of Surgery and Clinical Surgery in Rush Medical College, etc. With One Hundred and Seven Illustrations, including Seven Colored Plates. Philadelphia and London: The F. A. Davis Co., 1892. Royal octavo. Pp. xiii–504.

Professor Senn's valuable treatise is especially comprehensive as regards pathology and operative surgery. German and French authors are freely quoted upon the points discussed, including recent advances in bacteriological pathology. Sixty-five pages are devoted to the general discussion of the tubercular process, and the subject of bone tuberculosis is treated in about the same space. The remainder of the work is concerned with joint tuberculosis, a subject that interests not only the specialist, but every surgeon and general practitioner. Koch's bacillus is accepted as the essential cause of the tubercular process. Bone tuberculosis is affirmed to be due usually to embolic infection from an older tubercular focus in some other organ. Trauma only serves as an exciting cause of bone or joint tuberculosis in persons already harboring bacillary infection. It is characteristic that the exciting trauma is always slight; we do not hear of fractures or dislocations initiating the tubercular process. Articular tuberculosis may be primarily synovial or osseous, and it is pointed out that caries is not a disease, but the result of a tubercular process. Much stress is laid on circumscribed tenderness over an osseous focus as an early and reliable sign of the tubercular process.

In describing the symptoms of joint tuberculosis more stress is laid on pain and less on reflex muscular spasm than their relative importance would seem to warrant. Following Schüller, the author recommends guaiacol in doses of from two to five drops four times a day, and recognizes the value of parenchymatous and intra-articular injections of a ten-per-cent. iodoform emulsion in olive oil in the treatment of joint affections. The technique of the operation is carefully explained. The tuberculin treatment is mentioned in order to condemn it. The use of peroxide of hydrogen in the treatment of abscesses and sinuses is not mentioned.

The damage produced by pressure on diseased bones and joints is clearly recognized, but the advances in the mechanical treatment of these affections, especially in America, receive but scant attention. Extension splints for disease of the hip and knee are not recommended, and the indications for positive and continued counter-extension appear to be but dimly apprehended. Hutchison's (not "Hutchinson's") plan, which has proved disappointing in practice, is commended. A short hip splint is figured on page 437 as Sayre's long splint.

A brief history is given of the various operative procedures on the different joints, and the latest operations are carefully described. While urging the necessity for operative interference after the failure of milder methods, the author recommends erasions and atypical resections whenever they are practicable. He is careful to point out that a fatal tuberculosis, meningeal, pulmonary, or general, and local relapses follow immediately or remotely on a considerable percentage of operations.

It is certain that modern surgery can not be reproached with lack of resources. If the sufferer from coxitis, for example, after having his joint aspirated, injected, and scraped, the femoral component of the joint atypically, typically, temporarily, and permanently resected, his thigh amputated at the hip joint, and the acetabulum excised, is not satisfied, he must indeed be hard to please.

BOOKS, ETC., RECEIVED.

A Treatise on Nervous and Mental Diseases, for Students and Practitioners of Medicine. By Landon Carter Gray, M. D., Professor of Nervous and Mental Diseases in the New York Polyclinic; Visiting Physician to St. Mary's Hospital, etc. With One Hundred and Sixty-eight Illustrations. Philadelphia: Lea Brothers & Co., 1893. Pp. xi–17 to 687.

Mother and Child. Part I—Mother. By Edward P. Davis, A. M., M. D. Part II—Child. By John M. Keating, M. D., LL. D. Philadelphia: J. B. Lippincott Company, 1893. Pp. 6–9 to 472. [Price, $2.50.]

A Clinical Study of Diseases of the Kidneys, including Systematic Chemical Examination of the Urine for Clinical Purposes. Systematic Microscopical Examination of Urinary Sediments. Systematic Application of Urinary Analysis to Diagnosis and Prognosis. Treatment. By Clifford Mitchell, A. M., M. D. Second Edition. Chicago: W. T. Keener, 1891. Pp. xii to 431. [Price, $3.]

Electricity, Diseases of Women, and Obstetrics. By Franklin H. Martin, M. D., Professor of Gynæcology, Post-graduate Medical School of Chicago. With Illustrations. Chicago: W. T. Keener. Pp. xiv to 252. [Price, $2.]

Varicocele and its Treatment. By G. Frank Lydston, M. D., Professor of the Surgical Diseases of the Genito-urinary Organs and Venereal Diseases in the Chicago College of Physicians and Surgeons. With Illustrations. Chicago: W. T. Keener, 1892. Pp. 126. [Price, $1.25.]

Rectal and Anal Surgery, with a Full Description of the Secret Methods of the Itinerant Specialists. By Edmund Andrews, M. D., LL. D., and Edward Wyllis Andrews, A. M., M. D. Third Edition, revised and enlarged, with Illustrations and Formulary. Chicago: W. T. Keener, 1892. Pp. xiii to 164. [Price, $1.50.]

A Manual of the Practice of Medicine, prepared especially for Students. By A. A. Stevens, A. M., M. D., Instructor of Physical Diagnosis in the University of Pennsylvania. Illustrated. Philadelphia: W. B. Saunders, 1893. Pp. xviii–17 to 501. [Price, $2.50.]

Consumption and Kochine (Tuberculinum Kochii). II. (August, 1892.) Original Observations and Reports based on Individual Experience. By Dr. Rudolf Seiffert. Authorized Translation by Wolf von Schierbraud. Chicago: Ackermann & Eyller, 1892. Pp. 3 to 118. [Price, $1.25.]

Hygienic Measures in Relation to Infectious Diseases. Comprising in Condensed Form Information as to the Cause and Mode of spreading certain Diseases, the Preventive Measures that should be resorted to, Isolation, Disinfection, etc. By George H. F. Nuttall, M. D., Ph. D. (Göttingen), Associate in Hygiene and Bacteriology, Johns Hopkins University and Hospital. New York and London: G. P. Putnam's Sons, 1893. Pp. xi to 112.

Text-book of Ophthalmology. By Dr. Ernest Fuchs, Professor of Ophthalmology in the University of Vienna. Authorized Translation from the Second Enlarged and Improved German Edition. By A. Duane, M. D., Assistant Surgeon, Ophthalmic and Aural Institute, New York. With Numerous Illustrations. New York: D. Appleton & Co., 1892. Pp. xiii to 788.

A Treatise on Diseases of the Rectum, Anus, and Sigmoid Flexure. By Joseph M. Mathews, M. D., Professor of Principles and Practice of Surgery, and Clinical Lecturer on Diseases of the Rectum, Kentucky School of Medicine, Louisville. With Six Chromo-lithographs and Numerous Illustrations. New York: D. Appleton & Co., 1892. Pp. xvi to 537.

Diseases of the Eye, Ear, Throat, and Nose. A Manual for Students and Practitioners. By Frank E. Miller, M. D., Attending Physician, St. Joseph's Hospital, New York; James P. McEvoy, M. D., Throat Surgeon, Bellevue Hospital, Out patient Department, New York; and John E. Weeks M. D., Surgeon, New York Eye and Ear Infirmary. Series edited by Bern B. Gallaudet, M. D., Demonstrator of Anatomy, College of Physicians and Surgeons, New York. Philadelphia: Lea Brothers & Co., 1892. Pp. 6–17 to 228. [The *Students' Quiz Series.*]

The Physician's Visiting List for 1893. Philadelphia: P. Blakiston, Son, & Co.

An Experimental Inquiry concerning Elastic Constriction as a Hæmostatic Measure. By Nicholas Senn, M. D., Ph. D., Chicago. [Reprinted from the *International Medical Magazine.*]

A New Consideration of Hereditary Chorea. By R. M. Phelps, M. D., Rochester, Minn. [Reprinted from the *Journal of Nervous and Mental Disease.*]

A Plea for more Conservative Treatment of Nasal Affections. By Reuben Jeffrey, M. D. [Reprinted from the *Brooklyn Medical Journal.*]

The Ætiology of Itching. By Edward Bennet Bronson, M. D. [Reprinted from the *Medical Record.*]

On the Origin of Type in Disease. By Edward Bennet Brinson, M. D. [Reprinted from the *Medical Record.*]

Cases of Favus Contagion from the Lower Animals. By Samuel Sherwell, M. D., Brooklyn. [Reprinted from the *American Veterinary Review.*]

The Causes and Treatment of Sinuses resulting from Abdominal Section. By Andrew F. Currier, M. D. [Reprinted from the *Annals of Gynæcology and Pædiatry.*]

Stray Papers on Cerebral Subjects. By William B. Fletcher, M. D., Indianapolis, Ind.

New Inventions, etc.

A WIRE DRAIN FOR GENERAL SURGICAL WORK.*

By Carter S. Cole, M. D.

About a year ago, in discussing with an ex-president of the State society the question of drainage, I mentioned to him that in certain abdominal and pelvic conditions, where continued and free drainage was demanded, it had for some time seemed quite possible to me to attain such a result by the use of wire looped and then joined. The matter continued undeveloped from a practical standpoint, although perfectly clear in my mind, until September of this year, when a retroperitoneal abscess and a case of acute perforating appendicitis with beginning septic peritonitis, both coming under my care in a single day, emphasized the need in our surgical armamentarium of just such a drain.

Within a few days the W. F. Ford Surgical Instrument Company, to whom the idea had been demonstrated with flexible wire, had prepared the excellent forms that it is my pleasure to show you to-night.

It is unnecessary to call attention to the facts that the drain acts as such on the bottom and sides; that to prevent omentum or intestines from getting caught in the loops, gauze or rubber tissue can be wrapped around the drain; that we are able to introduce gauze through its sides and bottom if we wish to pack a large cavity; that it can not clog; that the abdominal and vaginal walls can not overlap it; that in cold abscesses, or indeed in any case where such a condition is desirable, the aperature of exit for retained products is kept constantly and uniformly open; that the end to be inserted can be so overlapped by compression as to be easily introduced; and that it ought to prove of service in a number of surgical lines.

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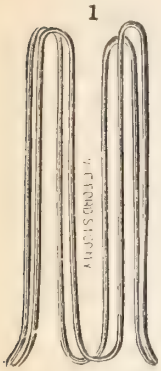
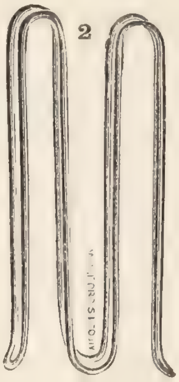
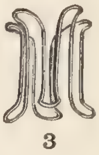
* Exhibited before the Society of the Alumni of Charity Hospital, October 5, 1892.


1. Circular form.


2. Flat form.


3. Self-retaining form.

It may not be amiss to add that in a large pelvic hæmatocele, opened by an incision through the posterior vaginal wall, a wire drain seemed to be of great value.

Several have suggested that the idea is not unlike the well-known and excellent drain of Dr. Paul Outerbridge. So far as I now recall, it was not in any way suggested by that drain, not even in connection with the use for which that drain was invented, although such a use is among its possibilities; and yet if this drain is so regarded, the author of the uterine drain has had abundant time in which to extend and amplify his original conception. A much more practical point is, Does the present offering add anything to the surgeon's ability to cope with disease? If so, it needs no apology, and none is offered; if not, its neglect will be an easy matter, and it is to be hoped that it will, at least, have done no harm.

A number of forms are shown; but you can easily perceive that with a strong forceps an individual drain can be made to assume any shape that the case in hand may seem to require. The difference in length is the essential feature.

The material now used for the manufacture is steel wire heavily nickel-plated. That better material may sooner or later be used seems not improbable, although at present the makers assure me that such is not the case.

12 West Fortieth Street.

Miscellany.

The Palliative Treatment of Anal Fissure, or Irritable Ulcer of the Rectum.—At a meeting of the Philadelphia County Medical Society held on November 23d Dr. Lewis H. Adler, Jr., read a paper the first portion of which, relating to the palliative treatment, was as follows:

There are some general rules that must always form a part of the treatment of anal fissure—to wit, to lessen as much as possible any inordinate action or distention of the bowel, and to prevent the ulcerated surface being irritated and abraded by the passage of hardened fæces.

To fulfill these indications enemata or mild aperients should be employed, and the diet must be regulated, the use of bland and unirritating food being enjoined.

It is not possible to point out a diet that would be even generally applicable, as so much must depend upon the state of the constitution and the previous habits of the patient; but in general it should be moderate in quantity, yet sufficiently nutritious—what the stomach can digest with ease, and has no tendency to produce constipation.

The patient should be directed to take moderate exercise; and if the bowels are disposed to be costive, a daily evacuation should be secured by the administration of an enema of warm water, or one of rich flaxseed tea, say from half a pint to a pint, to be given every evening, preference being given to the night-time, as the patient can then assume the recumbent posture, which, combined with the rest, affords the greatest protection from subsequent pain.

Instead of the enema, or in conjunction with its use, the action of the bowels may be regulated by the employment of some mild aperient, such as the patient has found by experience to agree with him.

All drastic purges should be avoided, as they are more or less stimulating and irritating to the extremity of the rectum.

The pain and spasm of the sphincter muscles attending the evacuation of the bowels is best relieved by the use of a suppository consisting of—

℞	Ext. belladonnæ	gr. ⅛ to ½;
	Cocain. hydrochlor	gr. ¼ to ½;
	Ol. theobromæ	gr. x.

Misce et ft. suppositorium j.

One suppository to be employed about half an hour before the enema is given, or a movement of the bowel is expected.

Instead of the suppository, an ointment of extract of conium may be used, as recommended by Mr. Harrison Cripps:*

℞	Ext. conii	ʒ ij;
	Olei ricini	f ʒ iij;
	Ung. lanolini	q. s. ad ℥ ij. M.

A small quantity of this ointment should be smeared over the parts five minutes before a passage, and again after it has occurred.

The various methods of treating anal fissure may be divided into the *palliative* and the *operative*.

Palliative treatment will meet with success in cases in which the fissure is tolerably superficial and of somewhat recent origin, especially when there is no great hypertrophy of the sphincter muscles.

Allingham† states that the curability of the lesion does not depend upon the length of time that it has existed, but rather upon the pathological changes it has wrought. This same authority states that he has cured fissure of months' standing by means of local applications, when the ulcers were uncomplicated with polypi or hæmorrhoids, and when there was not marked spasm or thickening of the sphincters.

It is essential to the success of the treatment of fissure, especially by local applications, that rigid cleanliness of the parts be maintained; for this purpose the anus and the adjacent portions of the body should be carefully sponged night and morning, and after each stool, with hot or cold water, the temperature being regulated to suit the patient's comfort.

In applying the various local remedies it is necessary first to expose the ulcer to view, and to anæsthetize its surface with a four- or eight-per-cent. solution of cocaine hydrochloride well brushed in with a camel's-hair pencil.

The application may have to be repeated once or twice, at intervals of about five minutes, in order to obtain the desired anæsthetic effect.

If any ointment has been used about the fissure, the anus should be subjected to a hot-water douche before using the cocaine, as cocaine will not exert its anæsthetic influence on a greasy surface.‡

Among the different remedies that have been used in the local treatment of fissure of the anus may be mentioned the following: Nitrate of silver, acid nitrate of mercury, fuming nitric acid, carbolic acid, sulphate of copper, the actual cautery, and chloral hydrate.

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* *Diseases of the Rectum and Anus*, second edition, London, 1890, p. 189.

† *Diseases of the Rectum*, fifth edition, London, 1888, p. 215.

‡ W. P. Agnew, M. D. *Diagnosis and Treatment of Hæmorrhoids*, etc., second edition, San Francisco, Cal., 1891, p. 91.

Of these topical applications the nitrate of silver is the best. Its effects are various: it lessens or entirely calms the nervous irritation, which is so important a factor in producing spasmodic contraction of the sphincters; it coats and shields the raw and exposed mucous surface by forming an insoluble albuminate of silver; it destroys the hard and callous edges of the ulcer, and tends to remove the diseased and morbid action of the parts.

The form in which this salt is usually employed is in solution (from ten to thirty grains to the ounce). The stick caustic may be also used.

To accomplish the best results the solution should be used once in twenty-four or forty-eight hours, according to circumstances. It may be applied by means of cotton attached to a silver probe or to a piece of wood.

The application is made by separating the margins of the anal orifice with the thumb and index finger of the left hand, and introducing into the anus the probe charged with the solution. The argentic nitrate is to be applied to the fissure only; a few drops are all that is required. If thorough local anæsthesia has been induced by the use of cocaine, the application of the silver salt produces little, if any, suffering, for by the time the anæsthetic has lost its effect the otherwise acute pain of the nitrate of silver will have passed away.

After each application the part should be smeared well with an ointment of iodoform (thirty grains to the ounce). The odor of that drug may be disguised by the addition of a few drops of attar of roses. Iodol may be used instead and in the same way, but I prefer the iodoform, owing to its anæsthetic qualities. After the ulcer has been touched once or twice with the silver solution the effect will be, in the cases that are benefited by this treatment, a considerable mitigation of the pain from which the patient suffered when at the closet and afterward, and the sore will present a healthy, granulating appearance, and will slowly contract in size.

Some authorities speak highly of the use of acid nitrate of mercury, fuming nitric acid, carbolic acid, the actual cautery, etc., but their employment, with the single exception of carbolic acid, is attended with more suffering than follows the use of the nitrate of silver or the simple operative treatment presently to be described. Furthermore, the application of these remedies is not so certain to effect a cure as either of the two procedures just mentioned.

The daily introduction of a full-sized bougie made of wax or tallow will sometimes act beneficially in cases of fissure by stretching the sphincter and producing such an amount of irritation as will set up a healing process in the ulcer. An application of cocaine or of belladonna ointment should be made to the part previously to the employment of the bougie.

In children and young persons, unless a polypus or a polypoid growth, or a congenital contraction, complicates the fissure, it is almost always curable without operation. In children suffering from hereditary syphilis, numerous small cracks around the anus are common, and they cause much pain. Mercurial applications and extreme cleanliness soon cure them, but they will return from time to time unless antisyphilitic medicines be taken for a lengthened period.*

Changes in Chemical Nomenclature.—We reprint the following from advance proof-sheets of an editorial article for the *Dental Cosmos* for December:

"The need of a reform in the spelling and pronunciation of chemical terms has for some time been very generally acknowledged. Much confusion has arisen from the existence of two distinct methods, both in general use by eminent authorities in chemistry, for the spelling and pronunciation of such words as bromid(ide), oxid(ide), chlorid(ide), amin(ine), gelatin(ine), morphin(ine), etc. The use of distinctive suffixes in chemical words is of undeniable value when consistently used to designate similar class compounds. Any violation of this rule necessarily leads to much confusion and renders the significance of the class suffix valueless. With a view to overcoming the inconsistencies of former methods and the resulting confusion of meaning, the Chemical Section of the American Association for the Advancement of Science some four years ago appointed a Committee on Spelling and Pronunciation of Chemical Terms, to take action in the matter and suggest such changes and additions as they deemed proper and advantageous. Pursuant to this idea, the committee opened correspondence with leading American philologists and chemists, seeking to obtain a 'thoroughly representative expression of opinion on the questions coming within the the scope of its commission.' Three preliminary reports were distributed to American chemists, inviting extended criticism and suggestion. The substance of the replies to these, carefully digested, was submitted to the Chemical Section for detailed discussion and decision. The final report of the committee embodies the results of these four years of correspondence and discussion, and was adopted at the meeting of the American Association for the Advancement of Science, held in Rochester, N. Y., during August, 1892. Among the prominent changes in spelling and pronunciation are the following: The final *e* is dropped from all words terminating in *ide*, and the syllable pronounced *-ĭd* (as chlorid, iodid, hydrid, oxid, hydroxid, amid, anilid, murexid). The final *e* is also dropped from the names of all elements and compounds which formerly terminated in *ine* (except doubly unsaturated hydrocarbons), and the syllable pronounced *-ĭn* (as chlorin, bromin, etc., amin, anilin, morphin, quinin, vanillin, alloxantin, absinthin, emulsin, caffein, cocain). The spelling al'ūminum is authorized instead of aluminium, and *f* is used instead of *ph* in the spelling of sulphur and its derivatives (as sulfur, sulfid, sulfite, sulfate, sulfo-, etc.). This change in the spelling of sulphur, though it is radical, is simply a return to the original form of its spelling, is in consonance with its spelling in other modern languages, and is in harmony with phonetic requirements. The substitution of *ph* for *f* in this word was a distinctly modern innovation.

"In view of the importance and value of the reform in spelling and pronunciation of chemical terms advocated by the American Association for the Advancement of Science, and the weight of authority which has been given to the report of the committee of its Chemical Section through its acceptance and publication by this body, the *Dental Cosmos* will adopt the new method as its standard for the spelling of chemical terms, commencing with the issue for January, 1893, and we respectfully urge upon our contributors the propriety of gaining a familiarity with the revised nomenclature by a study of the report, copies of which may be had by addressing the secretary of the committee, Dr. James Lewis Howe, Louisville, Ky., or by writing to the Commissioner of the Bureau of Education at Washington, D. C.

"The system has been adopted by the editors of Funk & Wagnall's *Standard Dictionary;* also by the *Journal of Analytical and Applied Chemistry*, of Easton, Pa. It is used by Professor George C. Caldwell, of Cornell University, president of the American Chemical Society, in the second edition of his *Elements of Chemical Analysis;* by Dr. T. Sterry Hunt in his *Systematic Mineralogy;* and by Dr. R. A. Witthaus in his *Manual of Chemistry.*

"The work of spelling reform in scientific nomenclature is one which is slowly but steadily progressing. The need for greater simplicity and the elimination of all that is inconsistent, superfluous, or misleading, is generally recognized. While we have no sympathy with the extremists who are constantly obtruding upon the world so-called systems of simplified spelling, which are usually so grotesque, empirical, and radical as to be self-condemnatory, we heartily welcome such carefully considered systematic changes as are here noted. They are in harmony with the spirit of progressive science, and should be so accepted by all who are interested in the cause of scientific accuracy and simplicity. The need for a similar and thorough revision of dental nomenclature is freely acknowledged, and the relegation of this work to a competent committee of the World's Columbian Dental Congress, who will be requested by the General Executive Committee to 'present a plan by which a universal system of nomenclature may be adopted by the Congress that would be acceptable to the profession of the entire world,' gives ground for the hope that the much-desired improvement in this field will be attained through its efforts.

"In this connection we desire to call attention to the dropping of the final *e* in the word dentine, the spelling *dentin* being the form used in both the *Century Dictionary* and *Foster's Medical Dictionary*, and it has been adopted as the preferrd form by the editors of Funk & Wagnalls's *Standard Dictionary.* The final *e* was dropped in the case of this word by the editors of these dictionaries to bring its spelling into harmony with that of the new spelling of similar words as noted in the report of the Chemical Section of the American Association for the Advancement of Science. We have not yet adopted 'dentin' as our office standard, as we preferred to await the action of the Committee on Nomenclature of the World's Columbian Dental Congress, who will no doubt give it official consideration. The names of the teeth and their surfaces, and the terminology of their anatomical and histological elements from the standpoint of both human and comparative anatomy, need systematic revision and simplification. Much of the difficulty in the way of such a reform in dental nomenclature heretofore has grown out of the lack of organization and authority for the work. This difficulty is now happily surmounted by the appointment of the World's Congress Committee for this purpose, which should have the hearty furtherance and co-operation of the whole dental profession in its work. Any suggestions as to revision of or additions to dental nomenclature will be gladly received by the committee, and can be sent to the chairman, Dr. G. V. Black, Jacksonville, Ill., or through the *Dental Cosmos.*"

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* Allingham. *Op. cit.*, p. 213.

[For the most part these proposed changes seem to us desirable, but we hope that the system of distinguishing alkaloids from glucosides by giving to the former names in *ine* and to the latter names in *in*, now quite well established in English, will not be given up.]

The Quack Question in Mansfield, Ohio.—At a meeting of the Council of the City of Mansfield, Ohio, held on November 29th, an ordinance was passed by a two-thirds majority which is intended to prevent any quacks, itinerant vendors of medicine, "tooth-pullers," or other impostors practicing their nefarious schemes in that city without first getting a permit from the health officer, who, by the ordinance, is required to be a regular physician. The ordinance also requires these persons to display a diploma from some respectable college before the health officer can give them the necessary certificate entitling them to a license at all. On the presentation of said certificate to the mayor they can receive a license for which they must pay not less than $25 nor more than $50 a day, and are also subject to a fine of not less than $25 nor more than $50 for each and every offense against the ordinance. The law goes into effect immediately after its publication, and applies to physicians, midwives, pharmacists, and dentists. If all the city councils throughout the State of Ohio would follow the example set by the council of Mansfield, they would take a grand step in the direction of getting rid of quacks and impostors, which infest all the large cities of the State. This plan has been tried in Kentucky and, so far, has proved to be of great advantage in getting rid of these leeches. It should be followed in all the States that have no special laws or can not get special legislation to remedy this great evil.

The late Dr. Francis U. Johnston.—The *Staten-Islander* for November 23d prints the following, adopted by the staff of the S. R. Smith Infirmary:

Whereas, Our esteemed colaborer on the medical staff of this institution, Dr. Francis U. Johnston, has been recently called by death from his professional duties here to the unknown service of the hereafter; be it

Resolved, That in his sudden demise we recognize the removal from laborious and exacting duties of the medical staff of the S. R. Smith Infirmary of a member who has always been prompt and efficient in performance of the work intrusted to him, and who had always a pleasant word for his associates and those who looked to him for physical relief, and that we shall miss his kindly face and cheery voice from among us with a profound sense of our staff's and our individual loss.

Resolved, That the staff tenders its sympathy to the wife and children of our deceased colaborer in this their greatest affliction, which is not without hope of a reunion in the hereafter, to which we are all hastening.

Resolved, That a copy of these resolutions, properly engrossed, be forwarded to the widow of deceased, and that copies also be sent to the leading county papers for publication.

The same newspaper prints also the following, adopted by the Medical Society of the County of Richmond:

Whereas, The death of our late esteemed vice-president, Francis U. Johnston, M. D., has been duly announced to this body as having occurred Sunday morning last; therefore,

Resolved, That the high estimation in which our deceased associate has been held by the Medical Society of the County of Richmond during his membership therein fully entitles him to this public expression of its appreciation of his high character and honorable record in its service.

Resolved, That this society tenders its sympathy to the sorrowing wife and children of our deceased friend in this their supreme bereavement, and commends to them the consolations bequeathed them in the memories that must ever cluster around a kind husband, a beloved father, an upright citizen, and, "that noblest work of God," an honest man.

Resolved, That the members of this society attend the funeral of our deceased associate in a body.

Resolved, That a copy of these resolutions, properly engrossed, be forwarded to the widow of the deceased, and that the same be published.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

THE NEW YORK MEDICAL JOURNAL, December 17, 1892.

Original Communications.

A SERIES OF PENETRATING ABDOMINAL WOUNDS.*

By FRANCIS H. MARKOE, M. D.,
SURGEON TO BELLEVUE AND ST. LUKE'S HOSPITALS.

During the past few years ten cases of penetrating wounds of the abdomen have come under the writer's observation. They have presented many different features and suggested much that is pertinent to the course and treatment of such injuries, and therefore, notwithstanding the fact that the subject has been ably written upon and many extraordinary cases reported, he begs to offer the following as a mere clinical contribution to the society.

The cases of penetration without visceral complications were three in number, and presented no features of peculiar interest; they were all seen while the writer was resident surgeon in the New York Hospital, as were also Cases IV, VI, and VII.

Case I.—Patrick G., aged twenty-one, admitted April 1, 1880; stabbed with unknown instrument in right inguinal region; wound one inch in length; free hæmorrhage from parietes; peritoneal opening not seen, but inferred from serous oozing; healing by granulation complete in four weeks; no abdominal symptoms.

Case II.—John McD., aged thirty, admitted April 8, 1880; stabbed; small wound in right umbilical region. Probe entered directly inward; no shock; Lister dressing; primary union; discharged at end of two weeks.

Case III.—Joseph O'D., aged twenty-eight, admitted July 22, 1880; stabbed; wound in left umbilical region; slight shock. Probe entered abdominal cavity through small wound of peritonæum when patient was seated, but could not be passed in any other position; Lister dressing; some pain in wound and oozing of bloody serum for few days. Discharged well in two weeks.

The remaining seven were complicated by either protrusion or wounds of the viscera, or by a combination of both conditions.

Of these, two did not come under the writer's care until too late for surgical interference.

Case IV.—W. K., aged thirty-five, admitted April 12, 1879, two days after having been stabbed with a stiletto. An outside physician had probed the wound and dressed it by applying a piece of adhesive plaster. Wound was in right inguinal region. When admitted there were marked evidences of general peritonitis; a tender, tense, and tympanitic abdomen; great pain; beginning collapse and marked dullness over pulmonary bases; he was kept under the influence of opium, but did not rally, and died on the following evening. The autopsy showed a general intense peritonitis, the intestines being everywhere glued together by recent exudation. The cavity contained several ounces of blood, undergoing decomposition, and large masses of fibrin. Three small punctured wounds were found in the jejunum.

Case V.—A strong, muscular Italian, aged about forty, stabbed with stiletto. The case was seen during the summer of 1882, through the courtesy of the medical attendant, at a town on the Hudson River. The wound was between two and three inches in length, and from it protruded some coils of intestine wounded in several places. Notwithstanding the severity of the injury, the man's general condition was excellent; his surroundings, however, were filthy beyond measure. The intestinal wounds were closed with ordinary sutures of strong thread, and the abdominal wound with deep sutures of fine cord. There was not the slightest attempt at exploration of the cavity, asepsis, or even cleanliness. Death occurred from peritoneal sepsis a few days later.

One was almost an evisceration and combined with such other injuries as of necessity to preclude thought of operative procedure.

Case VI.—John K., aged ten, admitted August 7, 1880, having been run over by a street car about half an hour previous. Besides multiple injuries of both lower extremities, there was a large lacerated wound in left inguinal region through which protruded several coils of small intestine. The boy lived about six hours, but was so profoundly shocked as to suffer no pain, although perfectly conscious.

Two were complicated by protrusion of wounded omentum, and required enlargement of the original wounds to effect reduction or permit adequate exploration of the general peritoneal cavity.

Case VII.—Fred. D., aged twenty-two, admitted June 19, 1880, within two hours of being stabbed. Moderate amount of shock; wound in median line below umbilicus three quarters of an inch long and transverse in direction. Through this protruded a mass of omentum between three and four inches in length and about as thick as a man's thumb. There was some slight hæmorrhage from a wound on its apex. Under ether, and with full Lister precautions including the spray, the wound was enlarged and the extruded mass returned to the abdominal cavity, all bleeding having been checked by ligature; two deep coaptation sutures were used and full Lister dressing applied. On the second day there was a slight chill, with pain in abdomen at site of wound and moderate tympanites, the temperature reaching 101° F. All the symptoms subsided rapidly without treatment, and at the end of a week the sutures were removed, primary union having taken place. He was discharged cured at the end of the second week.

Case VIII.—Thomas R., admitted to Bellevue Hospital in the afternoon of May 27, 1888. Early the same morning, while suffering from an attack of mania, he had plunged a sharp shoemaker's knife repeatedly into face, chest, and abdomen. Six wounds were found in the abdominal wall, two of which, in left umbilical region, were penetrating. After thorough cleansing of the abdominal surface, an incision three inches long was made connecting these wounds. The rectus muscle was much lacerated and its sheath filled with blood. A mass of omentum, wounded in several places, was found protruding through a ragged peritoneal wound. A few fine sutures closed the omental wounds and checked all hæmorrhage. Rapid exploration of the general cavity showed no further visceral lesions. Thorough irrigation with warm borosalicylic solution and complete closure of the wound by tier sutures was performed. Reaction perfect; primary union secured throughout and the patient discharged well at the end of three weeks.

Two, the last of the series, offer a striking contrast. Both were complicated by intestinal protrusion which occurred at the time or soon after the infliction of the wound, and both were followed by intestinal strangulation, in one as an immediate effect of the traumatism, but in the other not until after many years had elapsed.

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* Read before the New York Surgical Society, April 29, 1891.

Case IX.—John O'B., aged twenty-three; admitted to Bellevue Hospital March 7, 1891, one hour after having been stabbed with pocket-knife. When admitted was suffering from marked shock. Examination showed an incised wound in mid-line below umbilicus, through which protruded about eight inches of small intestine of a deep purple color, having on its free border a small longitudinal wound with everted edges. Pending the arrival of the operator, the coil and surrounding parietes were thoroughly cleansed and covered with warm borosalicylic compresses. Vomiting had repeatedly occurred. Under ether, and with most rigid antiseptic precautions, the abdominal wound was enlarged, and it was then seen that beside the constriction caused by the edges of the parietal wound a still tighter intraperitoneal constriction existed, due to the herniation of the coil through a small wound of the great omentum. This being enlarged, reduction was easily effected, and no other intraperitoneal lesions were found. A single Lembert suture of silk sufficed to close the intestinal wound, and a continuous suture of fine catgut the omental rent. After thorough irrigation of the peritoneal cavity with warm borosalicylic solution the wound was closed without drainage. The peritonæum was sutured with continuous suture of fine catgut, and the parietes by two extraperitoneal retention sutures of silk and interrupted catgut skin sutures. A suppurating sinus in right groin was dressed with iodoform gauze and covered with adhesive plaster to prevent, if possible, infection of the abdominal wound. The patient rallied well, but an old tubercular process in the lungs was stirred into fresh activity by the ether and a most distressing cough resulted, which kept the abdominal muscles in constant activity and sadly disturbed the dressing.

Notwithstanding great care, infection of the superficial wound took place, and on the fifth day the skin wound was freely opened, allowing the discharge of a small amount of pus, and was thereafter allowed to granulate. No abdominal symptoms have appeared at any time since the operation, and the writer is able to present the patient this evening before the society.

Case X.—Frederick J., aged fifty-four, admitted to Bellevue Hospital February 11, 1890. Had been stabbed twelve years before, as a result of which a small ventral hernia existed. Frequent attacks of nausea and vomiting, with obstipation and pain referred to the hernia, had occurred, but had always proved temporary, and subsided without any special treatment. He applied for treatment because of the severity and protraction of such an attack. Herniotomy and release of incarcerated intermuscular ventral hernia; death four hours later. The autopsy showed that, as a result of the fixation of the knuckle of intestine (the lower ileum), its corresponding mesentery was stretched across the posterior part of the abdomen, and beneath this a large portion of the small intestine was constricted.

The experience is a limited one, and purposely does not include the cases of gunshot wounds that have been met with; it represents, however, all other cases of penetrating abdominal wounds that the writer has seen, and, as the experience of an individual, seems worthy of being added to the mass of material rapidly accumulating, from which must be extracted and formulated rational and fixed general principles which shall govern treatment in the future.

Good and thorough work has been done already by others, but problems await solution. In a general way they have been grouped into three principal divisions:

1. Proof of peritoneal penetration.
2. Proof of intraperitoneal injury and its extent.
3. The indications for treatment.

The last depends upon the first two, but, even with their assistance, presents great difficulties, finally resolving itself into the decision between the expectant and the operative. This decision is often difficult, for symptomatology is uncertain, statistics unreliable, and deductions therefrom of limited value.

At best, only principles can be indicated and no set rules suitable for all cases adopted, for it is pre-eminent in such cases that the personality of the surgeon, the peculiarities and condition of the patient, his surroundings, and the character and extent of the injuries must be considered as modifying all rules.

Those cases in which the signs of penetration with intraperitoneal injury are present and unmistakable offer correspondingly clear indications for treatment, and therefore do not give us much concern. It is the class of cases in which penetration is doubtful, or, having been proved, no further evidences of intraperitoneal injury exist, that demand solution. Under these circumstances, "confronted by the mortality of the old method on the one hand and the difficulties of the new on the other," "it is nothing more than natural for surgeons to dread the performance of an operation which the extent of lesion may not justify and which in the event of fatal issue may give rise to medicolegal trouble" (Briggs)—an operation "which in the most experienced hands can not be denied to have a certain mortality *per se*, and which done promiscuously by those inexperienced in abdominal surgery will undoubtedly tend to render death more certain" (Nancrede).

What Stimson has said of gunshot wounds applies equally well to stab wounds in deciding the question of operation:

"It is not enough to have shown that some patients have survived laparotomy; it is not enough to have shown that those who have died without operation could have been saved only by one; it is not enough to have shown that laparotomy for other morbid conditions is daily done with a large measure of success and safety. It must also be shown that it saves a larger proportion of wounded patients than other methods save, and, even if this is done, it must still be ascertained whether we can not discriminate between the different injuries and recognize those in which it is proper to operate and those in which it is wiser to abstain."

At the present time those who have had the largest experience in dealing with these cases unhesitatingly affirm that early abdominal section, as defined by Morton, does save a larger proportion of wounded patients than other methods, but acknowledge that "the most intelligent study of the rational symptoms and objective signs of this class of wounds" has as yet failed to give us sufficient data by which we may discriminate between the different injuries and decide when to operate and when to abstain.

Their present attitude may be summarized as follows:

1. Given a wound of the abdominal wall, proof of penetration should always be sought, in the absence of definite

symptoms, by following the wound carefully down to the peritonæum.

2. Evidence of penetration having been obtained, median laparotomy should be immediately performed, or the existent wound enlarged "with enough freedom to allow of a sufficient inspection of the abdominal contents * for the repair of any injury found" (Cabot), or to permit adequate cleansing of the cavity.

3. Thorough irrigation and temporary drainage should be employed whenever much soiling of the peritonæum has occurred or is likely to follow, or when there are evidences of beginning inflammation.

These conclusions have been reached after faithful study of the existent material by which they are satisfied.

1. That for rational and scientific treatment the proof of penetration must be absolute, and can only be obtained ocularly (Dalton) by the introduction of something from without or the escape of something from within (Otis).

2. That in the line of exploration the probe is of limited value (Case IV of series), and, in fact, often misleading (Case III of series), doing harm by giving a false sense of security; that the same is true of even digital examination (Case 11 of table), and "that there is no absolute distinctive sign of wounds of either of the abdominal viscera, save the escape externally of its secretion or its contents" (Otis).

3. That the absence of shock does not prove the absence of grave intra-abdominal lesions, and that when present it is often as much emotional as physical, yet sometimes can not be differentiated from the signs of hæmorrhage or beginning sapræmia (Stimson). That it is frequently an evanescent condition which only proves fatal in combination with other evils (Duncan), and that "its intensity or continuance even are not standards by which the nature of the injury can be determined."

4. That a small parietal wound is not incompatible with extensive intraperitoneal injuries (Lowe) or fatal extravasation (Case IV of series), or immediate obstruction from reflex disordered intestinal action (cases of Dennis and Morton), and may afford an opportunity for partial protrusion with intramural incarceration (Case 16 of table), resulting fatally from immediate strangulation (Case 23 of table) or remote obstruction (Case X of series).

5. That visceral protrusion and intraperitoneal lesions not embraced in the protrusion may coexist (Case 11 of table), and, on the other hand, active hæmorrhage can occur, after reduction has taken place, from overlooked wound of the protruded mass (Case 5 of table).

6. That even in the absence of visceral lesions sufficient fluid, serous or bloody, from parietal injury, may gravitate to the dependent portions of the cavity (Cases 4 and 24 of table), and, in the event of infection, overtax the normal limited ability of the peritonæum to dispose of such products, a power "greatly influenced by the general condition of the individual and diminished or suspended by injury or disease" (Senn), "affording at best only an infinitesimal influence in lessening the death-rate from this class of injuries" (Gerster).

7. That septic infection is much easier to prevent than to cure (Gerster).

8. "That while transient symptoms between the second and fifth days may be regarded as evidences of adhesive reparation with perhaps a successful attempt at the disposal of infective material, more marked and progressive symptoms indicate the presence of more serious lesions which must be combated with free purgation or secondary irrigation and drainage."

9. That such exploration at the present day carries with it the minimum of risk and offers the most intelligent and safe method of dealing with injuries, the extent and character of which are always uncertain,* and which necessarily imply serious and often fatal possibilities.

10. That with perforating wounds, when left to Nature, recovery is the exception to the rule, the published percentage of fatalities being far below the actual.

Of the series of cases above reported, only two possess striking or unusual features, and the fact of their inclusion must be the apology for the presentation of the whole.

They favor, in the writer's opinion, the cause of those who demand early and intelligent exploration of such wounds and the radical treatment of the conditions found —the rational as opposed to the empirical method. They suggest, in addition, unusual complications as direct sequences, immediate and remote.

In a somewhat superficial and hasty glance through the literature of this subject but two cases of purely intraperitoneal strangulation, due to the recent injury, have been found; one, reported by Dennis, of a rapidly fatal volvulus which followed a penetrating stab wound, no other visceral lesions being discovered on autopsy; and a second, of intussusception, described by Morton, which was met during an exploratory laparotomy, for a similar wound, as the only intraperitoneal derangement. To these must now be added the case exhibited this evening of intraperitoneal strangulation through a stab wound of omentum which, as far as known, is unique.

Equally little has been found concerning the remote effects of this class of traumatisms, and it is hoped that this presentation will induce others to report their experiences. The case offers a pathological curiosity of "internal strangulation by normal structures abnormally attached" (Treves), and is reported briefly, as the writer hopes to include it in a series of cases of intestinal obstruction to be published in the future.

Appended will be found a list of fifty-four cases not included in the tables of Morton. Of this number, forty-six recovered and eight died, a mortality of nearly fifteen per cent. Of the fatal cases, five were the result of peritoneal sepsis, in two of which an overlooked visceral wound was found on autopsy. Shock and prolonged operation were the causes in two, and strangulation of a knuckle of intes-

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* 1. Inspection of immediate neighborhood. 2. Testing of dependent portions for extravasation. 3. Methodical and thorough search.

* As shown by "the numerous examples of unsuspected lesions revealed after death."

Case.	Operator and reference.	Age.	Time after injury.	Special symptoms.	Intraperitoneal injuries, etc., found.	Treatment of intraperitoneal injuries.	Results.	Remarks and post-mortem.
1	F. Hartley, *N. Y. Med. Jour.*, vol. l, p. 580.	Boy.	Soon.	Impalement wound; prolapse of contused intestine; signs of internal hæmorrhage.	Intestinal contusion; perforation of deep epigastric artery; large quantity of blood in peritoneal cavity.	Ligation of vessel.	R.	Laceration of parietes so great that lower part of wound packed with gauze.
2	C. K. Briddon, *ibid.*, vol. li, p. 557.	37	Soon.	Stab wound of thorax and abdomen; prolapse of omentum; slight shock and dyspnœa; walked 15 blocks after receipt of injury.	Protrusion of omentum externally and into thoracic cavity.	Reduction; sutures; no attempt to close wound of diaphragm.	R.	Signs of slight peritonitis for five days.
3	H. D. Rickenbach, *Pittsburgh Med. Rev.*, vol. iii, p. 237.	29	1 hr.	Stab wound of abdomen; protrusion of small intestine.	Wound of jejunum, $2\frac{1}{2}$ in. long.	Wound of intestine sutured; cavity cleansed.	R.	
4	A. T. Cabot, *Boston Med. and Surg. Jour.*, vol. cxxi, p. 81.	50	1 hr.	Punctured wound; slight shock.	None found.	One or two ounces of clotted blood sponged out.	R.	On third day protrusion of small piece of omentum, from slipping of sutures; resutured.
5	F. B. Harrington, *ibid.*, p. 83.	13	Soon.	Protrusion of omentum.	Wound of omentum.	Reduction, and ligature of bleeding points.	R.	Bleeding did not commence until after reduction.
6	G. E. Lyndon, *Med. Press and Circular*, London, 1889, vol. i, p. 304.	23	Soon.	Intestinal prolapse; shock.	Wound of intestine.	Wound of intestine sutured.	R.	
7	H. C. Dalton, *Jour. Am. Med. Assoc.*, vol. xv, p. 708.	16	2 hrs.	Omental protrusion; condition excellent.	Two wounds, descending colon; one wound of ileum; blood and fæcal extravasation.	Continuous suture of wounds; irrigation; drainage.	R.	
8	H. C. Dalton, *ibid.*, p. 709.	29	1 hr.	Protrusion of intestine, black and covered with dirt; profound shock.	Mesenteric wound 2 in. long, bleeding profusely.	Ligature of vessels; suture of wounds; irrigation; drainage.	R.	
9	H. C. Dalton, *ibid.*	15	2 hrs.	No protrusion; condition excellent.	Wound of cæcum, blood and fæcal extravasation.	Wound sutured; cavity cleansed; drainage.	R.	
10	H. C. Dalton, *ibid.*	18	2 hrs.	No protrusion; wound small.	Two wounds of liver, one wound of stomach.	Suture of wounds; cavity cleansed; gauze packing about liver wound.	R.	
11	H. C. Dalton, *ibid.*	27	1 hr.	Omental protrusion.	Wound of colon; blood and fæcal extravasation not found until secondary laparotomy.	Reduction and closure of cavity after mere digital exploration.	D.	Laparotomy done during acute peritonitis, caused by overlooked intestinal wound.
12	L. M. Stimson, *N. Y. Med. Jour.*, vol. l, p. 487.	. .	. . .	. . . .	Four intestinal wounds.	Wounds sutured; no drainage.	D.	Death at end of a week from intestino-peritoneal septicæmia. Post-mortem showed intestinal wounds completely healed, and there was slight peritonitis at only two points.
13	F. H. Markoe.	49	14 hrs.	Omental protrusion; slight shock.	Several omental wounds.	Wounds sutured; irrigation; no drainage.	R.	
14	F. H. Markoe.	23	2 hrs.	Intestinal protrusion; marked shock; repeated vomiting.	Small longitudinal wound of intestine; loop strangulated through wound of omentum.	Omental and intestinal wounds sutured; irrigation; no drainage.	R.	
15	N. P. Dandridge, *The Cincinnati Lancet-Clinic*, n. s., vol. xxvi, p. 163.	21	Soon.	Walked several blocks after injury; little shock; wound $\frac{3}{8}$ in. long.	Four intestinal wounds, two mesenteric wounds; considerable blood extravasated.	Wounds sutured; bleeding points ligated; irrigation and drainage.	R.	Forceps left on one bleeding point until fourth day.
16	N. P. Dandridge, *ibid.*	Adult.	44 hrs.	Small cutaneous wound, beneath which, but not protruding or visible, lay coil of intestine, strangulated by the opening in parietal peritonæum; great shock.	None found.	Hernial protrusion apparently reduced when first seen; recurred before operation.	D.	Post-mortem evidences of peritonitis; punctured wound of jejunum, which had been overlooked.
17	A. R. Jenkins, *Annals of Surg.*, vol. vi, p. 324.	Adult.	Soon.	Enormous protrusion of intestines, much soiled; deep collapse.	Wound of meso-colon; hæmorrhage from main right branch of arteria colica media.	Vessel ligated; thorough irrigation and cleansing of the cavity; parietes sutured; no drainage.	R.	Decided tympany on third day with slight pain, and temperature 101°.

Case.	Operator and reference.	Age.	Time after injury.	Special symptoms.	Intraperitoneal injuries, etc., found.	Treatment of intraperitoneal injuries.	Results.	Remarks and post-mortem.
18	Thos. Donnelly, *Tr. Royal Acad. of Med. of Ireland*, vol. vi, p. 182.	9	½ hr.	Impalement wound; intestinal protrusion.	None found; escape of clear serum.	No drainage.	R.	Wound simply en larged.
19	J. Venkataswami, *Indian Med. Gaz.*, vol. xxiv, p. 81.	6	5 hrs.	Protrusion of colon and omentum; considerable shock.	Omentum contused and lacerated.	Lacerated omentum secured in wound and cut off.	R.	
20	Drs. Steiger (Sr. and Jr.), *Brit. Med. Jour.*, vol. i, 1887, p. 481.	Adult.	....	Protrusion of four intestinal loops; extreme prostration.	Seven perforations.	Wounds sutured; no drainage.	R.	Operation performed under the administration of opium; wound enlarged.
21	Ch. Nélaton, *Bull. et mém. de la Soc. de chirurg. de Paris*, vol. xv, p. 100.	37	3 hrs.	Protrusion of intestine; slight shock.	Wound of intestine.	Intestinal wound sutured.	R.	Wound enlarged.
22	A. S. Priddy, *Internat. Jour. of Surg.*, vol. iv, p. 5.	Adult.	½ hr.	Protrusion of seven loops of intestine; little shock.	Four wounds of intestine (ileum), one of mesentery; quantity of blood.	Intestine sutured (Lembert); mesenteric vessel ligated; irrigation and drainage.	D.	On second day with stercoraceous vomiting; wound enlarged.
23	J. C. Oliver, *The Cincinnati Lancet-Clinic*, n. s., vol. xxvi, p. 177 (discussion).	..	....	Stab wound with very narrow-bladed knife; wound very small; abdominal wall 4 in. thick.	Several punctured wounds of intestine.	Wounds sutured.	D.	*Post-mortem:* A knuckle of small intestine found strangulated in peritoneal end of stab wound; took place probably subsequent to operation, which was very thorough.
24	A. Koehler, *Berlin. klin. Woch.*, vol. xxvii, p. 1199.	Young.	Soon.	Great prostration.	None found; quantity of fluid blood and coagula.	....	R.	The intraperitoneal blood supposed to have come from vessels in parietes, which were ligated.
25	H. C. Dalton, *ibid.*, p. 710.	21	1½ hr.	Three wounds, omental protrusion; great shock.	Wounds of liver, jejenum, and diaphragm; blood, but no fæcal extravasation.	Wounds sutured; no drainage.	R.	
36	H. C. Dalton, 11 cases not reported in detail. *Ibid.*	..	....	....	....	....	R.	All recovered.
54	Postempski, 18 unreported cases. *Wien. med. Presse*, vol. xxx, p. 878.	..	....	....	....	....	..	15 recovered, 3 died.

Fifty-four cases; recoveries, 46; deaths, 8; mortality, 14·81 per cent.

tine in the peritoneal end of the original wound subsequent to thorough median laparotomy the remaining one.

If now we first contrast the two series and then combine them, we have the following results:

	No. of cases.	No. of recoveries.	No. of deaths.	Mortality, per cent.
Morton............	79	48	31	39·24
Markoe........	54	46	8	14·81
Total..........	133	94	39	29·32

THE "PERFECTED" URETHROSCOPE.*

By WILLIAM K. OTIS, M.D.

THE visual inspection of the urethral mucous membrane in the diagnosis and treatment of the tedious and intractable lesions with which it is so frequently affected was a desideratum which has until recent years been so hedged in by mechanical difficulties as to place it beyond the reach of all save the most enthusiastic specialists.

The expense alone of the cumbersome and imperfect instruments of Desormeaux and Cruise placed them beyond the reach of many, while the use of the simple head mirror and tube was difficult and unsatisfactory.

The original forms of electro-urethroscope, in which a glowing loop of platinum wire was introduced directly into the tube, necessitated the use of a complicated cooling apparatus and a knowledge of batteries, rheostats, and electrical resistance only attained by the expert electrician.

Soon after the invention of the modern incandescent electric lamp by Edison in 1879, the feasibility of utilizing this as the source of illumination was suggested and afterward put into practice by Schall, an instrument maker of Erlangen, who constructed the first really practical electro-urethroscope.

His instrument, however, was soon superseded by one devised by Josef Leiter, of Vienna, which gave not only a more brilliant illumination, but a much more ready access to instruments and applicators.

Roughly described, this instrument consists of a sheet-metal trough, two inches and three quarters in length by an inch and a half wide, at the proximal end of which a concave mirror, about an inch and a half in diameter, is placed. At the distal end of the trough is the funnel-shaped opening of the urethroscopic tube, the upper edge of which is about half an inch above the upper edge of the mirror. About an inch and a half from the mirror, coming through the bottom of the trough, a small electric lamp is placed, the electrical connections to which run through a round handle four inches long by half an inch in diameter, with a somewhat complicated arrangement for controlling the lamp, fitted with binding posts at its lower end, to which the cords from the battery are fastened. The urethroscopic tubes are attached to the funnel by means of a sliding joint.

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* Presented before the American Association of Genito-urinary Surgeons, June 21 1892.

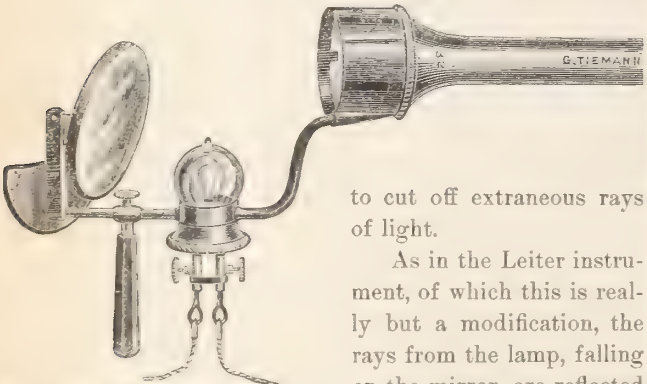
The rays of the lamp falling upon the mirror are rendered parallel, and enough light thrown down the tube to give very excellent illumination at its distal end, the eye looking directly over the upper edge of the mirror.

So great an advance was this instrument over all others which preceded it that for a year or two it seemed impossible that it could be improved upon, but it gradually became apparent that it possessed several disadvantages, and these of an important character.

It was cumbersome, and the rigid joint between it and the urethroscopic tube made it necessary to take great care not to render the examination painful, or possibly injure the urethra, one hand having to be entirely devoted to the instrument. It was complicated in construction, consequently expensive.

To overcome these objections I devised an instrument of but *one sixth* the weight of that of Leiter, giving more room for the introduction of instruments, and extremely simple in construction.

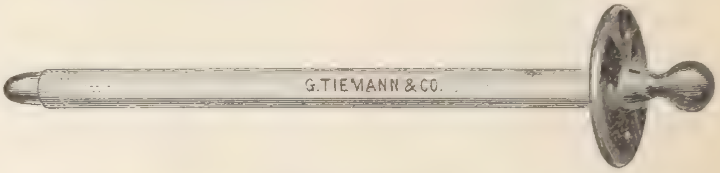
This instrument consists of a small concave mirror, which a stout wire, about two inches in length, connects with the proximal end of the urethroscopic tube. Midway on this wire is attached a small Edison electric lamp, a semicircular screen being placed immediately behind the mirror to cut off extraneous rays of light.



W. K. Otis's electro-urethroscope with sliding joint.

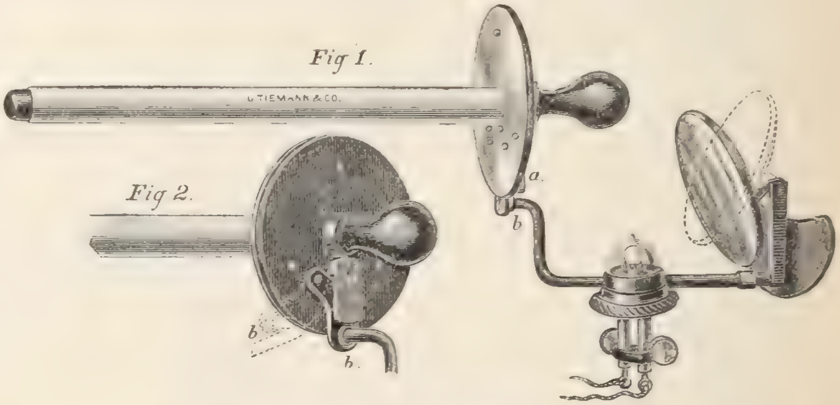
As in the Leiter instrument, of which this is really but a modification, the rays from the lamp, falling on the mirror, are reflected down the tube, and the illuminated field is easily observed by an eye looking over the top of the mirror.

Dr. F. Tilden Brown has ingeniously adapted this instrument to his urethral speculum, and it would, in like manner, be equally serviceable with any of the various forms of specula in general use.



Klotz's urethroscopic tube.

After several years of experimentation in attempts to improve upon the urethroscopic tube,* I am forced to the same conclusion as my friend Professor Samuel Alexander, that the best tube for this purpose is that of Dr. Hermann G. Klotz, of this city, and this is the one which I now use in all ordinary examinations. It is the simplest form possible, and, having no funnel at its proximal end, allows of a gain of nearly an inch in distance over that used by Desormeaux.



W. K. Otis's electro-urethroscope adapted to Klotz's tube.

I have subsequently adapted my instrument to this form of tube by placing at the distal end a small, flat foot, at the outer extremity of which is a smooth pin. This pin fits into a hole in the tube plate, and, on revolving the instrument a quarter of a circle, the foot swings under a shoulder riveted to the plate and is securely fastened. This joint is firm and easy of manipulation, readily allowing the illuminator to be attached or removed at any time during the examination.†

This instrument, while it was very light and obviated many of the objections to the original, yet was not perfect, the principal fault being that it still permitted the escape of a large amount of extraneous light, which soon became annoying to the eye of the operator. The mirror (an inch and a half in diameter) throwing parallel rays, only an exceedingly small portion of its surface was serviceable; the rest, reflecting back the rays, served to increase the amount of extraneous light.

On this account I determined to abandon the old instrument, and have devised one on an entirely different principle from that of former urethroscopes, using a lens as a condenser instead of the reflected light from a concave mirror.

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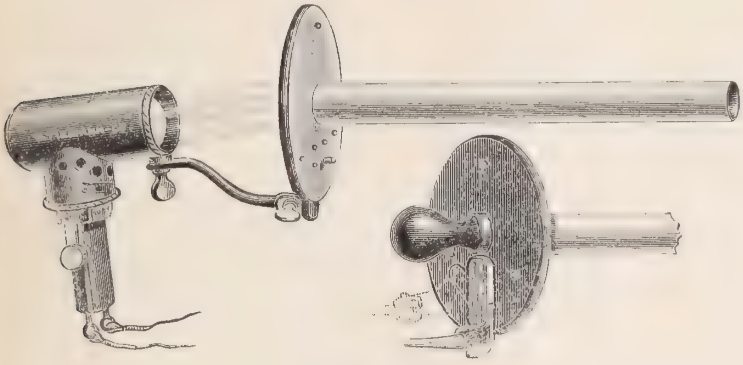
* Recent Improvements in Urethroscopic Apparatus. By W. K. Otis, M. D. *N. Y. Med. Jour.*, April 13, 1889.

† A New Form of Electro-urethroscope. By W. K. Otis, M. D. *Journal of Cutaneous and Genito-urinary Diseases*, April, 1892.



W. K. Otis's "perfected" urethroscope.

This instrument consists of a metal tube or cylinder, an inch and a quarter in length by half an inch in diameter, closed at one end. A quarter of an inch from the open end of this tube is a plano-convex lens, so arranged that it may be easily removed for cleaning. On the inferior surface, near the closed end of the tube, an elbow is let in, a quarter of an inch in length and half an inch in diameter, through which the source of illumination (a small incandescent electric lamp) is introduced, a row of holes being bored at its base to allow of ventilation. The handle of the instrument consists of a piece of hard rubber an inch long by half an inch wide, the electrical connections running through it to the lamp which is placed on top. This handle fits into the elbow by means of a bayonet joint, bringing the lamp immediately behind the plane side of the lens. A thumb-screw "switch" in the handle places the lamp under control, so that it may be turned on or off at pleasure.

The instrument is attached to the urethroscopic tube by means of a stout wire an inch and a half in length, with hinged joints at each end which swing in opposite directions and are furnished with set screws, thus allowing the instrument to be put in any position, though when once adjusted it will rarely be necessary to move it. If the ordinary form of tube is used, the distal end is provided with a simple ring sliding joint; but, as I have already said, I greatly favor the use of the tube of Dr. Klotz. I have arranged the instrument for this form of tube.

When the instrument is in position and the lamp illuminated, a strong beam of light is thrown down the urethroscopic tube and the urethral mucous membrane more easily and clearly observed than with any other form of urethroscope with which I am familiar.

The advantages of this instrument are:

1. The exclusion of all extraneous light, the presence of which is a most annoying fault, both in the urethroscope of Leiter and in my own improvement on it.

2. A very much more ready access to the urethral field, both to the eye and for instrumental applications.

3. Increased illumination.

4. By abandoning the funnel and sliding joint, an inch and a half in distance is gained from the source of illumination to the distal end of the urethroscopic tube, increasing the illumination and allowing the eye to be placed just so much nearer the mucous membrane to be examined.

5. Its extreme compactness and lightness, weighing *less than one ounce*, even when constructed of brass.

6. Its great simplicity, which should insure a moderate cost.

I wish here to express my thanks to the firm of Messrs. George Tiemann & Co., not only for the excellence and skill with which they construct the present instrument, but for the patience and zeal with which they have aided me in all my experiments in modifying the urethroscope and its tubes, many of which, while giving bright promise, turned out to be impracticable not until much time and labor had been spent on their development.

5 West Fiftieth Street.

MALIGNANT DISEASES OF THE UTERUS,

WITH ESPECIAL REFERENCE TO OPERATIVE TREATMENT.*

By W. EVELYN PORTER, M. D.,
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Malignant diseases of the uterus may, for the purposes of this paper, be divided into two simple classes—carcinoma, characterized by the presence of epithelial formations, and sarcoma, formed on the type of connective tissue, composed largely of cells, chiefly of the spheroidal and spindle-shaped varieties.

It is of the utmost importance at the outset that every practitioner, in order that these conditions may be properly diagnosticated and treated, should at least in a general way be familiar both with the gross and microscopical appearances of these main classes, as well as with the history of their growth and symptoms resulting from their presence.

Carcinoma uteri, in about eighty per cent. of all cases, commences in the cervix and portio vaginalis as small indurated nodules, flat, but somewhat elevated in the superficial layers, beneath the mucous membrane. The induration is due to infiltration of irregular masses of epithelial cells, and the growth gradually increases in size and extends to the surface of the mucous membrane, sooner or later, acccording to the form, resulting in an ulcerating surface. The edges of the ulcer are irregular, indurated, and somewhat elevated. Ulceration at the edges of the new-formed tissue is usually progressive, extending in different directions to adjacent structures. Occasionally carcinoma develops more superficially as papillary or fungous excrescences projecting into the vagina. In rare cases it begins in the body of the uterus, while the lower portion is not involved until the disease is well advanced, rendering the diagnosis more difficult.

Sarcoma uteri is met with less frequently than is generally supposed, the percentage of cases as compared with carcinoma being surprisingly small. It is usually found either in the body or fundus, developing as a circumscribed tumor or diffuse infiltration.

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* Read before the Society of the Alumni of Bellevue Hospital, December 2, 1891.

The circumscribed sarcomata are attached by a broad base to the uterine walls and may be either hard, resembling fibroid growths, or soft, of amorphous, jelly-like consistence. They are rarely encapsulated, and are characterized by the presence of round cells, although the spindle-cell and myxomatous forms likewise occur. In the diffused form the inner surface of the uterus presents an ulcerated appearance with fungous excrescences. It is likely to invade the uterine wall, and may extend to adjacent pelvic viscera and pelvic peritonæum.

In addition to being familiar with the pathological conditions, it is especially necessary to know and to be constantly on the lookout for the early symptoms pointing to these conditions. In meeting with quite a large number of cases, however, I have been impressed with the decided absence of all symptoms in the early stages, especially in those cases where the affection is limited to the vaginal portion and before the process of ulceration has begun.

Probably the earliest symptom to manifest itself and the most constant in the majority of cases is uterine hæmorrhage. This may be associated with, or preceded by, a glairy muco-purulent discharge. It may appear as menorrhagia or as metrorrhagia; either slight at first, gradually increasing in severity, or profuse from the start, or it may appear after coitus and violent exercise. In the early stages it may be mainly attributed to disturbances in the circulation of the affected part, but later is the result of advanced ulceration and destruction of tissue.

Hæmorrhage, if slight and occurring at or near the menstrual period, is likely to be neglected and no importance attached to it. Appearing at about the time of menopause, it is considered as a slight return of the normal flow. In carcinoma of the body hæmorrhage is especially common, the disease in this location usually appearing late in menstrual life or after the climacteric.

Watery leucorrhœal discharges, resulting at the outset from exfoliation of surface epithelium and indifferent tissue covering the morbid process, are particularly common. As the deeper tissues are destroyed the discharge becomes more profuse, containing dead tissue, changing from the whitish to a brownish character, containing more or less blood. A gangrenous condition ultimately results, giving the discharge a characteristic offensive odor, which, when once observed, will never be forgotten or mistaken for anything else.

Pain is spoken of as an almost constant symptom, but in the early stages of carcinoma, especially of the cervix, I have noticed that it is rarely present, the disease assuming formidable proportions before any severe pain is experienced. It usually develops first in the lumbar and sacral regions, later in the abdomen and thighs, until, finally, it becomes general, being of a lancinating and burning character. Supposed cases of sciatica developing after the establishment of the menopause should be regarded with suspicion, as occasionally radiating pains in the thighs will be among the earlier symptoms. The pains are likely to be paroxysmal, and are often relieved in advanced cases by operative measures, to be mentioned later on.

Cachexia, which is considered as one of the most prominent symptoms, is of little importance in connection with the early diagnosis of cancer. It results in the later stages from anæmia and hydræmia following hæmorrhage, and from septic absorption of the products of decomposition, rather than from any specific infecting of the cancer itself.

The general health of the patient is usually good until the degenerative changes are well advanced. Digestive disturbances, however, often occur as early symptoms. Anorexia and more or less persistent vomiting, due to a chronic gastritis and obstinate constipation, are likely to exist.

Of the later symptoms, due to advanced disease with involvement of adjacent viscera and metastatic deposits in remote portions of the body, I shall make no mention, as they have no bearing upon the question of the operative treatment of the disease.

The symptoms already mentioned pertain to both carcinoma and sarcoma, but in the latter disease hæmorrhage is usually earlier, more constant, and more profuse, accompanied or preceded by discharge and sharp expulsive pains. The tumor is apt to grow more rapidly and the symptoms referable to pressure appear earlier. The general health fails sooner, the patient emaciates and rapidly passes into a cachectic condition.

In arriving at a positive diagnosis in malignant disease of the uterus, the microscope is chiefly to be relied upon; and, where practicable, a piece of the growth should be removed or scrapings from its surface secured for careful microscopical examination before operative measures are resorted to. In securing pieces for examination it is important to remove not only the superficial layer, but also a section of the deeper portions of the growth, in order to obtain satisfactory results. The examination of scrapings, furthermore, is often unsatisfactory in that they are mingled with blood and portions of normal endometrium.

Wherever extensive induration of the cervix of a nodular character exists, accompanied by menorrhagia or any of the other suspicious symptoms of malignancy, a portion of the tissue for examination should be promptly excised. The presence of a papillary growth with broad base or an ulcer with sharply defined borders and granular surface should be considered as probably malignant and submitted to careful examination. In the advanced stages the diagnosis may readily be made by gross appearances alone, and in the majority of cases the only operative measures are simply palliative in character.

Large numbers of women are being referred to the New York Cancer Hospital yearly, suffering from malignant diseases of the uterus which have advanced too far to be cured by operative measures, and, unfortunately, in most instances there is a history of treatment for months previous for "inflammation of the womb," "ulcer of the womb," etc. Many of them, although presenting symptoms of advanced malignant disease, have not even been subjected to vaginal examination, notwithstanding the fact that they have been under the observation of regular practitioners of medicine for varying periods of time.

Another class are those that have fallen into the hands of charlatans and quacks, wasting months in the trial of various plasters and pastes. Many of these sad cases having been brought to my attention, I can not refrain from urging upon the profession the necessity of early diagnosis. It is to-day, I hold, one of the most important points in the consideration of this subject. The responsibility at the outset falls largely upon the general practitioner and family physician, and I believe that the subject should be constantly brought to their attention by the various medical journals in order that they may be continually on the lookout for any symptoms pointing to this dread disease.

In considering the various operative procedures for the relief of malignant disease, I shall simply refer to a few of the more important points, as, of course, the limits of a single paper would not permit of a thorough consideration of all.

The operations may be divided into two classes—radical and palliative.

I. Radical.

(*a*) High amputation of the cervix.
(*b*) Vaginal hysterectomy.
(*c*) Abdominal hysterectomy.
(*d*) Laparo-vaginal hysterectomy.
(*e*) Hysterectomy by Zuckerkandl's method.
(*f*) Hysterectomy by Kraske's sacral method.

II. Palliative.

(*a*) High amputation of the cervix.
(*b*) Curettement.

Radical Measures.—High amputation of the cervix, or, more correctly speaking, partial removal of the uterus as described by Schröder and Hofmeier and later modified by Baker, has many advocates, and the admirable results reported by them as well as by many other surgeons command for it careful consideration. In my opinion, however, it is an operation which should never be performed where total extirpation is possible, owing to the absolute impossibility of determining with certainty, clinically, whether the disease has extended beyond the cervix. By some it is held that its performance should be limited to cases of epithelioma of the cervix, and in these only when detected in their incipiency. As a matter of clinical experience, the vast majority of cases do not apply for operative relief until the growth has extended to such an extent as to render the operation of partial removal absolutely impracticable. This view, I am aware, differs radically from that held by the more ardent advocates of the operation, and only time and extended experience will decide as to which is correct.

In malignant disease of other portions of the body—as, for example, the breast—not only is the growth itself removed, but also as much as possible of adjacent tissue, and all lymphatic glands in the immediate vicinity. Why, then, in cancer of the uterus should not the same principles apply? It is found in cancer of the cervix that the corporeal endometrium undergoes changes of a malignant character, and it is well known, as I have just stated, that by gross appearances it is impossible to map out the exact limits of the growth in the cervix itself. It seems obvious, therefore, in view of these facts, that as much tissue as possible should be removed in order to effect a complete cure. It is claimed that glands adjacent to the uterus as well as the vaginal mucous membrane when involved can be more satisfactorily dealt with where the entire uterus is not removed; but I consider, on the contrary, that more room is afforded for their examination and removal in the operation of hysterectomy.

The chief argument heretofore in favor of high amputation has been the low mortality rate, but, as the technique is improved and greater experience attained in the more radical operation, the death-rate generally, as it is in the hands of some surgeons to-day, promises to be little, if at all, in excess of amputation.

In performing high amputation the patient may be placed either in the latero-prone or dorsal posture, preferably the latter, where the uterus can be readily drawn down. In the previous preparation for this as well as all operations upon the female genital tract the bowels should be thoroughly emptied and a catheter passed immediately before operation. All hair should be removed from about the vulva, and the vulva, vagina, and rectum thoroughly washed with soap and water, and the rectum and vagina irrigated with a bichloride solution, a bichloride tampon being left in the rectum. These precautions are, unfortunately, not always observed, notably evacuating and cleansing the rectum.

Everything being in readiness for the operation, the exact size, direction, and condition of the uterine canal should be ascertained by means of a sound. The uterus is then seized and drawn down by a utero-tractor, enabling the operator to hold the uterus firmly without the annoyance of the slipping and tearing of tissue invariably experienced when the ordinary tenaculum or volsella is used.

A transverse incision is next made through the vaginal wall, just anterior to the cervix; the bladder should be separated by careful dissection and pushed up with the finger. A similar incision is then made posteriorly. To prevent hæmorrhage, a ligature of silver wire, which may be tightened or loosened at pleasure, may be placed on either side, high enough to include the uterine arteries. The cervix is freely excised and a funnel shaped piece removed from the body of the uterus, the base of the portion removed being about on a level with the internal os, the apex extending almost to the fundus of the uterus. All bleeding points should, as far as possible, be secured, and the vaginal margins stitched to the edges of the remaining stump. The raw surfaces, after being dried, may be thoroughly cauterized by means of the thermo-cautery. The cauterization not only checks all oozing, but is supposed to aid in preventing subsequent extension of the disease through the lymphatics by destroying any tissue that may have been left behind in the original excision.

The wound should be left open and packed with iodoform gauze. The subsequent course of the case is likely to prove tedious, the wound healing slowly by granulation.

The patient should be carefully watched and a secondary operation performed upon the slightest evidence of recurrence. A similar operation is done by Byrne, of Brooklyn, in which he uses the galvano-caustic loop to the exclusion of scalpel and scissors.

The first well-authenticated case of *vaginal hysterectomy* for uterine cancer was performed by Sauter, of Constance, in 1822; from that time up to 1878 but few were recorded. In 1879 Czerny advocated the operation, which he performed the previous year and which, in its main features, is essentially the operation performed to-day. Improvements in technique have been made from time to time by Polk, Wylie, Hunter, Cushing, Krug, Fenger, and others in this country, and Schröder, Alshausen, Martin, and Freund in Germany. It has been condemned by many, notably by Tait; but when we realize the deplorable condition of the women applying for relief from this dread disease, should we not give them any possible chance which such an operative measure may afford? Granted that in all operations for the relief of these conditions the percentage of recurrence is large; yet many cases of complete immunity from all traces of the disease during periods varying from three to ten years and more have been recorded, and it seems only right that we should give our patient the benefit of the chance. It is the one operation which offers the greatest hope of permanent relief.

The mortality from the operation is constantly diminishing and the percentage of cures increasing. I do not hesitate, therefore, to advocate the performance of the operation in all cases of malignant disease where the growth is confined to the uterus, or uterus and adjacent vaginal mucous membrane, and where the size of the tumor is not too great to be readily removed *per vaginam*. When the disease has extended to the broad ligaments or into the pelvic cellular tissue, or where there is extensive involvement of the vaginal wall, palliative measures only are indicated, and this operation should not be performed. The patient should invariably be subjected to examination under narcosis before vaginal hysterectomy is resorted to, and at the time of this preliminary examination it is wise, where the process has gone on to ulceration, to thoroughly remove the sloughing tissue by means of the curette and render the cavity of the uterus aseptic by the application of carbolic acid. Hæmorrhage from the cervical portion may be checked by means of the cautery. The preparation of the bowels should be attended to and bichloride douches given, and immediately before the operation all of the precautions mentioned in the case of high amputation should be observed. The abdomen should be shaved and cleansed in addition to the vulva, as at any time the necessity of opening the abdomen may arise.

In the performance of the operation the patient should be placed upon the back in the lithotomy position. A short broad speculum should be used, preferably the Simon, as it is bent at quite an acute angle so as to prevent its slipping, which is so troublesome with some specula. When there is an ulcerating surface, especially if it has not been previously curetted and rendered aseptic, it is wise to pack the uterine cavity with iodoform gauze and close the external os by a row of sutures, thus avoiding the danger of infection. The uterus should be brought down and held firmly, first being depressed, so as to facilitate the anterior incision through the vaginal wall, and then elevated for the posterior incision. The incision should be made as far as possible from the margin of the growth, when extensive, so as to avoid leaving any diseased tissue behind. The bladder should be separated by dissection through the intercellular layer and pushed well up out of the field of operation, as by this precaution the danger of injuring the bladder and ureters is decidedly diminished. The extent and difficulty in the dissection will vary greatly in different cases, but in all a sound should be introduced in the bladder from time to time to prevent any possibility of injuring it.

Pawlick's suggestion of catheterizing the ureters is theoretically an excellent procedure, but practically it is likely to prove difficult and in the majority of cases unnecessary.

The vessels at the base of the broad ligaments may now be ligated, or the posterior *cul-de-sac* first opened to be sure that there are no adherent coils of intestine or complicating pyosalpinx posterior to the broad ligaments to interfere with the ligatures. Immediately before opening into the peritoneal cavity, at whatever stage it is done, the vagina should be irrigated with bichloride solution and the hands and sponges cleansed and all bleeding stopped. After opening into the cavity nothing should be used in the way of irrigation aside from boiled water. In opening through the *cul-de-sac*, the peritonæum can be readily recognized by its glistening appearance. It may be stitched to the vaginal mucous membrane immediately after being opened, or this may be deferred till the end of the operation. A sponge to which a silver wire has been attached may now be pushed up behind the uterus to prevent prolapse of intestine. The uterus is drawn well over to the right side and the operator introduces the index finger of the left hand through the posterior opening and draws the left broad ligament forward. A curved needle or ligature passer, such as those devised by Wylie or Cleveland, should be introduced from before backward, upon the finger, already inserted, as a guide, and strong catgut or twisted silk carried through and tied, the ends being left long where the latter is used. The tissues between the ligatures and uterus should next be divided and then further ligatures applied, the amount of tissue included in each ligature being small and each ligature including some of the tissue embraced in the ligature immediately below. The vesico-uterine fold of peritonæum should be opened either at this or a later stage, and the upper ligature carefully arranged so as to include the ovarian vessels. The same process should be followed on the opposite side, the appendages either being removed with or immediately after the removal of the uterus.

To facilitate the ligature of ovarian vessels and removal of appendages, the uterus is sometimes retroverted and the fundus drawn through the opening in the posterior *cul-de-sac*. This, as a rule, should be avoided, especially where there is extensive involvement of the cervix, as it increases the danger of infection. The appendages, if diseased, should always be removed, and I prefer to remove them even if normal. The cut surfaces should next be carefully examined and all bleeding points securely ligated. If the peritonæum and vaginal mucous membrane have not already been sutured it should be done now. The ligated masses should be drawn down into the vagina so as to avoid any danger of coils of intestine becoming adherent to them. Most operators leave the vaginal roof open, although some close it by a row of sutures.

The dressing which I prefer consists of a large piece of iodoform gauze which is first arranged in the vagina so as to form a sort of pouch into which strips of gauze can be packed without disturbing the wound, or passing up into the peritoneal cavity. In no instance should strips of gauze be placed loosely in the vagina without some such protection. The gauze should not be removed until the eighth or ninth day unless there is some hæmorrhage or elevation of temperature. Should the discharge become offensive or other reasons arise for removal of the gauze packing, the larger piece forming the pouch can remain undisturbed, thus avoiding interfering with the relation of parts at the seat of operation.

The after-treatment consists, as in most major operations, in absolute physical and mental quiet. Nothing but hot water should be given by the mouth during the first forty-eight hours at least. The bowels should be moved on the third or fourth day, or earlier if for any reason intestinal obstruction is feared. Vaginal douches should be commenced after removal of dressings, and, where silk has been used, the ligatures should be removed from time to time as they become loose. The granulations should be dusted with aristol, dermatol, or iodoform at each examination. The patient can usually sit up at the end of the third week.

The use of clamps is strongly advocated by many, it being claimed that by their use much time is saved, and the danger of hæmorrhage and cancerous infection diminished. I hold, on the other hand, that it is poor surgery, and that the danger of hæmorrhage is not as great where ligatures are properly applied. If the tissues, including the lymphatics, are ligated before the parts are severed, the danger of cancerous infection is no greater. The time required is little more; the difference, if any exist, being of minor importance. Furthermore, with ligatures there is less danger of injuring the intestine, there is no broad sloughing mass left to infect the wound, there is less danger of secondary hæmorrhage, and the wound does not have to be disturbed at the end of forty-eight hours, as is the case where clamps are used. The wound heals much more promptly and the fact of the broad ligament stumps being drawn down into the vagina diminishes the danger of intestinal obstruction from coils of intestine becoming adherent. Finally, one of the strongest reasons for using ligatures in preference is the difference experienced by the patients themselves, there being much less pain and none of the discomforts invariably resulting from the presence of clamps at first and sloughing stumps subsequently.

Abdominal hysterectomy for cancer was performed as early as 1825 by Langenbeck. In 1878 Freund reported a successful case, the technique employed differing but little from that commonly practiced at the present time. A high mortality rate followed the performance of the operation, and as the vaginal method was found to be applicable to the vast majority of malignant cases, abdominal hysterectomy was seldom performed. The cases in which it is found necessary to adopt this method are chiefly cases of large sarcomata of the body of the uterus in which the tumors are too large to be removed through the vagina. Where malignant growths reach such a size, however, there is likelihood of there being more or less involvement of the broad ligaments as well as secondary deposits in the lymphatic glands.

When the operation is performed the patient should be placed in Trendelenburg's posture, the intestines being thus readily kept out of the field of operation, and the abdominal incision should be made large enough to permit of removal of the uterus without the necessity of subsequently enlarging the opening. If the tumor be very large, so as to interfere with the proper application of ligatures, it may be brought up into the abdominal opening, a corkscrew having been introduced to facilitate lifting and holding it. An écraseur should then be firmly applied around the lower portion of the growth and the bulk of it removed, care being taken not to allow any blood or septic material to escape into the peritoneal cavity during the removal.

Where strong, flexible piano-wire is used the écraseur will be found far more reliable and satisfactory than the rubber ligature. The stump being firmly held by the écraseur, the ligaments may be ligated, the bladder first being separated in front, care being observed not to include the ureters in the ligature. After the main vessels are firmly ligated the stump should be dissected away. Usually the entire tumor is removed at once, but the danger of hæmorrhage and also the danger of injuring the ureters is, I believe, greater than where the above method is adopted. The peritonæum and vaginal wall should be stitched together and the small vessels in the posterior vaginal wall ligated, as fatal hæmorrhage has not infrequently followed from lack of this latter precaution. An opening is left in the vaginal roof for drainage, and the ligatures upon the larger vessels are either drawn down into the vagina and treated as in the vaginal operation, or cut off close and allowed to remain undisturbed. The abdominal wall may be closed, relying upon drainage below. The same vaginal dressing should be used as in vaginal hysterectomy.

The two operations are occasionally combined, especially in cases of vaginal hysterectomy, where troublesome complications in the way of adherent intestines, pyosalpinx, etc., are found. The term *laparo-vaginal hysterectomy* is applied to this operation which has a great deal to commend it, as it gives the operator perfect control of the parts. It is growing in favor, Cleveland, Edebohls, and others reporting successful cases, and if experience shows that by opening the abdomen the danger is not materially increased, it may be generally used. A description of the technique is unnecessary, as it is simply a combination of the two methods described, the uterus being removed either through the vagina or abdominal opening.

Other methods have been suggested for performing hysterectomy, two of which I shall describe, although they are applicable only to very exceptional cases, and it is somewhat questionable whether they will ever be generally performed.

One, devised by Zuckerkandl, consists in a convex incision through the perinæum from one tuber ischii to the other with convexity upward. The perineal muscles and that portion of the levator ani coming from the pubes are severed, thus freeing the rectum and facilitating its being drawn backward. The dissection is continued until the peritonæum forming Douglas's *cul-de-sac* is reached. This is freely opened, the hand introduced, the uterus retroverted and drawn down through the opening with the appendages. The peritonæum above is opened and the bladder and ureters carefully pushed back and aside, after which the broad ligaments are ligated and the uterus removed. The stumps of the broad ligament may be either drawn down through the opening in the vaginal roof or returned to the peritoneal cavity. The advantage claimed for the operation is the greater amount of room afforded, enabling the operator to see the parts easily and operate with less difficulty.

Kraske's *sacral method*, which is applicable for the removal of the rectum or any of the lower pelvic structures, consists in the resection of the coccyx and one sacral wing to the third foramen. Where the uterus is removed the cutaneous incision is made with its convexity toward the right side and the right wing of the sacrum removed. The rectum is then pushed aside, revealing the peritonæum, which is opened, hæmorrhage having been previously checked. An excellent view is now obtained of the uterus and appendages, and every facility afforded for complete removal and perfect drainage.

The formidable nature of the operation would, it seems to me, render it applicable only to advanced cases of malignant disease where it is desired to remove carcinomatous tissue from structures adjacent to the uterus with the hope of prolonging life. Several successful cases have recently been reported, however, and the operation is looked upon with favor by many.

Palliative measures for the relief of the distressing symptoms of advanced carcinoma consist in partial removal of the growth by the operation already described as high amputation, with or without the use of the cautery or curettement. In removing portions of the cancer in these cases, the galvano-caustic loop, as used by Byrne, may be of service. The aim is not to remove all of the diseased tissue, but to remove areas of sloughing unhealthy material, which act as a source of infection and result in a foul irritating discharge. Here repeated operations at varying intervals, as described by the advocates of the operation, may be expected. The patients are informed that the operations are simply palliative, and nothing more than temporary relief is looked for. As the disease advances portions may be removed and the cautery or styptics applied.

Curettement is the operation more generally resorted to in these cases, and with almost, if not fully, as satisfactory results. A sharp curette should always be used, the dull, flexible copper curette being entirely inadequate for the satisfactory removal of the cancerous material. Not infrequently have I seen the latter instrument employed with the result of removal of little more than clotted blood and mucus, with, perhaps, occasional shreds of the more superficial and soft portions of the diseased surface.

The preparation for the operation is the same as for high amputation. The sound should always be used before the curette is introduced, so that the location and direction of the canal and the extent of involvement may be ascertained. Failure to observe this precaution has resulted in perforation into the peritoneal cavity, the operator supposing he was curetting in the direction of the uterine canal, while in reality a sharp anteflexion existed, the curette passing directly through the posterior wall. When the involvement is in the body of the uterus and the cervical canal is small and contracted, it may be necessary to use divulsors in order to facilitate the operation.

Curetting should always be done thoroughly and systematically, especially when the upper portion of the uterus is involved; otherwise the diseased tissue may be removed from one portion and barely touched in another. The blood and material remaining in the uterine cavity should be washed out occasionally, and, at the end of the operation, the parts thoroughly dried and all hæmorrhage checked either by means of the cautery or applications of carbolic acid, or a fifty-per-cent. solution of chloride of zinc. Where the latter drug is used, care should be taken to prevent its getting upon the healthy vaginal mucous membrane, as otherwise great pain and discomfort might result. Where the disease has been confined to the body and fundus, a drainage-tube should be used. Subsequently vaginal douches of weak solutions of creolin should be given, and, if there is much pain, gauze soaked in a four-per-cent. solution of chloral may be introduced.

Various drugs are used internally and locally, many of them affording great relief, but the limits of this paper do not permit of further mention of them.

Where profuse hæmorrhage occurs suddenly in advanced cases, the surgeon should be summoned at once and curettement properly performed, as the amount of blood lost is often enormous, and not infrequently proves fatal when not attended to. The distressing pains experienced in these cases are often diminished and the offensive character of the discharge checked. There is so little that can be done for the relief and comfort of these cases that one should not hesitate, I think, to curette, from time to time, in all cases where it is found to act beneficially.

In conclusion, I desire to present the following summary of my views:

1. A knowledge of the gross and microscopical appearances of malignant growths of the uterus is essential to their proper diagnosis and operative treatment.
2. A thorough knowledge of the symptomatology, especially in the early stages, should be attained by every practitioner of medicine, and the slightest existing carcinoma should demand immediate physical examination and consultation with the surgeon.
3. A microscopical examination should be made of any tissue simulating malignancy.
4. The entire uterus should be removed in every case of

malignant disease where there are evidences of the growth being confined to the uterus, and the sooner the operation is performed the greater are the chances of immediate success and ultimate cure.

5. Vaginal hysterectomy is the operation which should be resorted to in all cases where the uterus is small enough to be removed *per vaginam*, and in its performance ligatures should be applied to the larger vessels to the exclusion of clamps.

6. In removing large tumors by abdominal hysterectomy the écraseur should be applied and the bulk of the tumor removed before the ligatures are applied.

7. Laparo-vaginal hysterectomy should be performed where serious complications in the way of pelvic inflammation and adhesions exist.

8. The operations suggested by Zuckerkandl and Kraske, on account of their formidable character, should be performed only in exceptional cases, if at all.

9. Where the disease has extended to the parametrium or extensively into the vaginal wall, in no case should hysterectomy be resorted to.

10. High amputation should be performed only as a palliative measure.

11. In curettement for cancer of the uterus the sharp curette should be employed.

12. After all operations for malignant disease the patient should be kept under observation for as long a period as possible.

50 West Thirty-third Street.

A CASE OF INTRALARYNGEAL TUMOR
WHICH ILLUSTRATES SOME OF THE DIFFICULTIES OF DIAGNOSIS IN INTRINSIC CARCINOMA OF THE LARYNX.

By JOHN DUNN, M. D.,
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Mr. M., aged fifty-nine years. Previous history: hay fever, from which Mr. M. has suffered severely every summer for many years. About a year previous to his coming for treatment he had a severe hæmorrhage, which his physicians thought due to hepatic changes. Mr. M. has always been a free liver. Had the grip three times within the past three years; it always affected severely his respiratory tract, while during the second attack his physician "feared he would choke to death" (but, as no laryngoscopic examination was made at this time, about two years ago, it is probable that the attack was one of amygdalitis or retro-tonsillar abscess).

Condition May 11, 1892.—Lungs show more or less emphysema, with conditions usually found in chronic bronchitis. Mr. M. suffers from asthma during his hay-fever attacks. Nose and upper pharynx show result of chronic inflammatory conditions, although there are no specially marked hypertrophies. Tonsils have been enlarged. Relaxed and congested condition of whole mucous covering of pharynx, soft palate, and pillars. Cough is more or less continuous, is annoying, and its constant effort weakens Mr. M. no little. Considerable expectoration.

Larynx.—Right half shows usual appearance to be found in old cases of laryngitis complicating bronchitis with emphysema—*e. g.*, congestion with thickened condition of mucous membrane. Left half: True vocal cord hidden, save just at its anterior end, from view, by a bulging out of the ventricle, which shows one or two teat-like projections from its lower surface anteriorly. Ulceration covering three quarters of the superior vocal cord. This ulceration is shallow, its surface is whitish, while there seems to be but little secretion from it. The mucous membrane adjoining the ulcerated spot is fiery red and angry-looking. There is some pain at the seat of the ulceration, not severe, but annoying; *this sensation of "pain extends to the left ear, where it is much more severe than in the throat."*

On the posterior wall of the larynx, about on a level with the superior vocal cord, on the left of the median line, is a small inflamed area with a linear ulceration of its surface. Under a spray of four-per-cent. cocaine solution the cough and pain cease and there is a relief from these symptoms for an hour or two. There are no enlarged glands to be found. Voice but little interfered with, although at times Mr. M. becomes hoarse and for a time finds it difficult to speak above a whisper. The chief subjective symptoms are the continuous and weakening cough and the pain in the left ear, with occasional change in voice.

The question as to the nature of the tumor was the important point in the case. There was nothing in the appearance of this area to suggest tuberculosis; no œdema of the parts; none of that mouse-nibbled ulceration so characteristic of the tubercular process; no anæmia of the laryngeal mucous membrane or of the soft palate; no excessive, tough, mucopurulent secretion; the tumor was unilateral; there was no especial pain; no difficulty in swallowing food or liquids; no impairment of the articulations of the larynx; no early impairment of the voice; nor was it probable that the tumor was syphilitic, for, although the ulceration was not deep, there was apparently a hard tumor filling out the ventricle on the left side, below the ulceration; nor was it likely it was a gumma, inasmuch as it is not characteristic for a gumma to break down so as to affect merely its surface, while gummata of the larynx, before they reach the stage of ulceration, are, as a rule, painless. It was not lupus; nor was it likely that the tumor was sarcoma.

The patient was put upon the iodide of potassium internally, while the surface of the tumor was rubbed with pyoctanin for several days. As no change, save apparently for the worse, took place, the possibility of the tumor being a carcinoma was recognized, and consultation was advised. (And I wish to add here that this case has been reported solely with the idea of showing how difficult sometimes is exact diagnosis in the rarer forms of intralaryngeal tumors. The physicians had here in consultation I consider the two first authorities as laryngologists in the United States.) After a careful examination of the case, the physician to whom Mr. M. was taken, recognizing the uncertainty of the nature of the tumor, advised that the tumor be watched for a month, that the iodide of potassium be given during this time in rapidly increasing doses, and that some stimulant application be made to the surface of the ulcer, adding that in all probability the tumor was carcinoma, and, if no change for the better should take place in this time, that he would advise an operation.

The treatment was continued for a month, the iodide being given in increasing doses until it produced so much discomfort that the amount had to be decreased. At the end of the month the only change visible was an apparent increase in reddened area of the mucous membrane adjacent to the ulcerated surface. Mr. M. was taken North a second time for consultation. The physician whom I had consulted before was out of the city. He had been kind enough to speak in regard to the case to another physician, to whom I went with Mr. M. The same difficulties of exact diagnosis were present at this time as there had been before, and I left Mr. M., that his throat might be watched for a few days before an operation should be attempted. After watching the case for about ten days Mr. M. was told that he had carcinoma of the larynx and that an immediate operation would probably be necessary. Several preparations were applied to the throat during the days prior to the time set for the operation. At last compound tincture of iodine was made use of, and just at this time the annual attack of hay fever set in. Almost immediately a change appeared in the tumor. So marked was this change that after two or three days the operation was postponed indefinitely, and Mr. M. went to the seaside for a month, at the end of which time the ulceration had entirely disappeared; the ventricle of this side had reformed and there remained nothing in the larynx to suggest a malignant growth, the left vocal cord being visible for its whole length. Nor was there any return of the trouble the middle of October, when Mr. M. was last seen.

The above-given case in its termination was an entire surprise to me. The age of the patient, the indefinite length of time that the laryngeal swelling and ulceration had been present (for Mr. M. said he did not know when they began; perhaps for as long a time as six or eight months before I saw him the same subjective symptoms had been present in his throat), the absence of external manifestations of the disease, the ulceration, the lancinating pains in the ear, the reddened area surrounding the ulceration, the apparently solid condition of the swelling—all of these taken singly and together seemed to point to intrinsic carcinoma of the larynx as the trouble. Under iodide of potassium internally and various local applications externally, the appearance of the ulceration and swelling remained unchanged for seven weeks—facts which suggest further the possibility of the malignant nature of the growth. At last the compound tincture of iodine is applied, and the ulceration begins to take on a healthy appearance. Unfortunately, the cure may not be entirely credited to the iodine, inasmuch as the hay fever set in just at this time, beginning in the nose, where it was severe; and I am inclined to believe that the congestion of the nasal mucous membrane withdrew enough blood from the region of the laryngeal ulceration to allow a healthy action to set in, and that to the appearance of the hay fever in the nose the healing of the laryngeal ulcer must be attributed. The nature of the ulceration and of the bellying out of the ventricle to such a degree as to shut out the vocal cord of this side from view must remain conjectural. We can imagine a simple ulceration of a congested false vocal cord due to the coughing and expectoration incident upon chronic bronchitis; the constant cough and expectoration could prevent the healing of this ulceration and make it a chronic ulcer, secondary to which might follow swelling with congestion of the parts below the ulcerated region, and this might become great enough to simulate a tumor, cause a bellying out of the ventricle, and so shut out from view the true vocal cord. Again, it may be suggested that the starting point of the ulceration was the severe hæmorrhage which the patient had had a year previously; this may not have been due to liver changes, as Mr. M.'s physician told him, but have resulted from the bursting of an engorged vein in or beneath the mucous membrane of the false vocal cord, and this may have been the starting point of ulceration and subsequent swelling. But these are merely conjectures. "Prolapse of the ventricle" was at one time suggested as the possible explanation of the tumor. I think, however, that the symptoms were never sufficiently characteristic to make this diagnosis probable, while the history of the case clearly seems to say the tumefaction was due to other causes. The nature of the teat-like projections from the anterior end of the ventricular mucous membrane I do not know. They, however, disappeared with the disappearance of the rest of the tumor. The above case shows that there may exist in the larynx a condition which, both objectively and subjectively, may so closely resemble intrinsic carcinoma as to deceive even the most practiced eye. It shows, further, that while in carcinoma of the larynx the knife should be resorted to at the earliest time practicable, the operation should be deferred until either the microscope or the appearances of the suspicious tumor make the nature of the tumor unmistakable. It further shows that in certain cases, so long as there is doubt as to the nature of the growth, provided, of course, the size or position of the growth be not such as to demand surgical interference, delay is justifiable. And, lastly, that in medicine, as in other things, the unexpected may happen.

A NOTE ON CHLOROFORM.

By CHARLES S. MORLEY, M. D.,
DETROIT, MICH.

Having gained confidence in chloroform, through an experimental method aiming at minimum dosage, and having as the chief factor of safety exclusive attention to the respiratory movements and rhythmical breathing, I have come to trust it under all circumstances where the unconscious state is compatible with life.

The anæsthesia can be produced and maintained for one or two hours with from one drachm to three drachms of chloroform.

The chest is bared and the assistant is required to note the breathing and pay no attention to the pulse. The secret of the method is rhythmical breathing, uniform density of the chloroform vapor with the minimum quantity. This can be accomplished by covering the face with a handkerchief, pulling up a fold at the center for an air space for the chloroform vapor, and dropping two to five drops a minute, one at a time, with the quantity regulated according to the breathing. Probably benefit might be secured in every case by breathing exercises as a part of the preparation treatment.

The New York Post-graduate Medical School and Hospital.—The directors have issued a circular stating that they had made what they supposed to be excellent arrangements for sending invitations for the laying of the corner stone to every member of the corporation, of the board of directors, of the ladies' auxiliary committee, and of the faculty, and to the numerous contributors to the funds of the institution. Unfortunately, for reasons entirely beyond the control of the executive officers of the school, many of these invitations were never delivered.

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RHEUMATISM IN CHILDREN.

The study devoted during recent years to the diseases of children has materially broadened our ideas of disease in the adult. The delicate tissues of the child, unchanged by previous disorders, enable many diseases to express themselves with far more clearness than the more stable tissues of the adult do. In no condition is this truer than in rheumatism. Viewing that disease only as it appears in the adult, we must accept the old idea that it is not common during childhood. In the light of broader knowledge we must admit that it is common and very important. We have learned that rheumatism is the cause of numerous phenomena not limited to the fibrous tissues and the joints. This disease as it appears in the child confirms the belief that amygdalitis, purpura, erythema, chorea, and pleurisy may all be rheumatic manifestations. These various conditions in adult life are grouped and appear massed together, and are usually subordinate to the arthritis. In early life they are frequently isolated and appear singly, the interval between the various manifestations being variable. They follow each other in no regular order, and no two cases pursue exactly the same course. The fact has recently been emphasized that in children the phenomena may be distributed over years instead of weeks or months, and the history of rheumatism may be the history of a whole childhood. In adults, in whom the arthritis is the central and all-important symptom, these various manifestations appear as complications. In children they can not properly be considered as such. They more frequently overshadow the arthritis and are the direct result of the rheumatic poison. This great variability in symptoms renders it difficult or quite impossible to describe a typical case of rheumatism in childhood, yet it would be an error to suppose that the disease is necessarily obscure or impossible of diagnosis. Error in diagnosis results not so much from lack of characteristic symptoms as from the fact that the physician is looking only for the symptoms he has been accustomed to see in the adult.

The arthritis of children usually assumes the form which in the adult is known as subacute. A single joint only may be affected. There may be stiffness and soreness and perhaps a little swelling, but rarely redness. The duration of these symptoms is short, being sometimes limited to a few hours. In some instances the tendons are affected while the joints escape. The tendons of the neck and those back of the knee are most frequently involved. Recurring amygdalitis is unquestionably an expression of the rheumatic diathesis and is frequently the ushering-in symptom of acute rheumatism. A symptom rare in the adult, but occurring frequently in children, is the development of fibrous nodules. These are little rounded bodies appearing usually about the joints. They are most common on the margins of the patella, at the elbow, along the vertebræ and clavicle, and in the extensor tendons of the hand. They are neither painful nor tender. They appear suddenly, sometimes in successive crops, but are slow in disappearing. Their close association with rheumatism is undoubted. Purpura is a common manifestation of rheumatism in children and young adults, and may occur entirely apart from other symptoms. The relation of chorea to rheumatism is well known. It is not always rheumatic in origin, but rheumatism is by far the most frequent and potent factor in its ætiology. Pleurisy is undoubtedly in some cases a direct result of rheumatism, and is a serious complication. Cardiac disease is the most prominent feature of rheumatism in childhood. No attack is too mild to preclude the possibility of cardiac involvement. A murmur may appear and cardiac valvular disease develop during the course of a torticollis. It is this danger of the development of heart disease that renders rheumatism during early life not simply a troublesome and painful malady, but an insidious and dangerous disease, to be detected as early as possible and combated by every means at our command.

THE REMOVAL OF FOREIGN BODIES FROM THE VITREOUS WITH THE ELECTRO-MAGNET.

The *Maryland Medical Journal* for July 2d gives the following data concerning a case successfully treated by Dr. S. Theobald, of Baltimore: A boy, twelve years old, while using a hammer, received in his eye a piece of steel, which penetrated the cornea and lodged in the vitreous. He was not seen by Dr. Theobald until the sixth day after the injury. The eye was then highly injected, and iritis was impending. The cornea had been penetrated at its upper margin and there was a wound of the size of a pinhead in the iris. The vitreous showed a diffused opacity with numerous floating opacities; the details of the fundus could not be seen; vision was $\frac{16}{125}$; the foreign body was not visible. Five days later, or on the eleventh day after the accident, the injection had increased and iritis had begun. An incision was made through the sclera between the external and inferior rectus muscles. A Hirschberg electro-magnet was used. A single cell was judged sufficiently energetic, since with it the magnet lifted a tack-hammer from the table. The point of the magnet was introduced into the vitreous three times without success, but on the next trial it brought out a small piece of steel. The lad suffered little after the operation, the pupil being kept dilated with atropine. Seventeen days after the operation he was discharged, with the vision $\frac{16}{45}$. Forty-four days after the operation the vision was $\frac{16}{30}$; the fundus of the eye had become clear, and only a few floating opacities remained in the vitreous.

Magnetic removal in such cases has now been reported successful in a large enough number of instances to justify us in the hope of saving a goodly percentage of eyes if the operation is not delayed too long.

The prospects of success are, of course, largely dependent on our having a knowledge, or a reasonably close idea, of the position of the offending body in the vitreous.

AN INVESTIGATION OF OINTMENT BASES.

HELBING'S *Pharmacological Record* for November is devoted to a study of lanolin and other ointment bases. This paper, by Dr. Passmore and Mr. Helbing, is a most instructive contribution to the subject. The authors have originated and worked out in their London laboratory their saponification method, the results of which are very fully given in this last monthly issue. They maintain that their studies now, for the first time, point out the way to a more exact chemical knowledge of the fatty substances used in medicine than has hitherto been thought attainable. Theirs is the first proposition, it is believed, for the detection and determination of other fats in the wool fats, whether the former are derived from vegetable, animal, or mineral sources of sophistication. This is a problem not only of high scientific interest, but also of great practical and commercial importance. The authors' results, they hold, are the more significant to the pharmacist for the reason that their lengthy research has involved the examination of a great variety of "purified wool fats." A really pure wool fat, such as lanolin, is for many purposes the best base for the external administration of mercury and other substances, and for this very reason specimens of *adeps lanæ* that do not meet the requirements of the pharmacopœia, although these are by no means so stringent as they may be made hereafter, lead to disappointing and untoward results.

To sum up the authors' contributions, it may be said that the lanolin of German manufacture seems to furnish the purest and safest base for unguents that has yet been presented. Without specifying the other forms of "refined wool fat" that were subjected to this investigation, the authors state that "the purity of those fats leaves very much to be desired, and none of them," with the exception of lanolin, "even answers to all the pharmacological requirements." Lanolin, on the other hand, is an ointment base of such purity as to be a stable and almost ideal product. In connection with this averment, the authors remark that they have at their laboratory some unguents, made with this base, containing white precipitate and mercury biniodide that were put up three years ago, and are even now in such perfect condition that they could be properly dispensed for dermatological use at a moment's notice—"a most remarkable experience," they say, "if it is taken into consideration that *ointments made with lard or paraffin will not keep the same number of weeks*."

We are inclined to indorse the writers' estimate of this their latest study, that it will be held to be not less interesting and valuable to the medical world than those that have preceded it.

MINOR PARAGRAPHS.

CHOLEDOCHOTOMY.

THE *Deutsche Medizinal-Zeitung* for December 1st summarizes an account by Professor Küster, published in the *Archiv für klinische Chirurgie*, of the case of a woman, forty-nine years old, who for two years had suffered with attacks of abdominal and sacral pain with fever. At first the attacks had been from two to four weeks apart, but had increased in frequency until they occurred every week. In about two hours after the onset there was jaundice. The patient had often found concrements in the dejecta about six hours after the subsidence of an attack. She was emaciated, and her general condition was very bad. The partial efficacy of a course at Carlsbad and the occasional coloration of the fæces were held to indicate closure of the ductus choledochus communis rather than of the hepatic duct. An oblique incision ten centimetres long was made beneath and parallel with the arch of the ribs, and, two concrements having been found in the ductus choledochus communis, they were removed by incising it, the surrounding parts being protected with iodoform mull. The incision into the duct was closed with catgut and the finest silk sutures. In spite of a brisk secondary hæmorrhage on the eleventh day, making it necessary to reopen the wound entirely, the patient made a rapid recovery. Two more stones were passed during the following year, after a course at Carlsbad for a fresh attack, and since that the attacks have not recurred.

THE INTERNAL ADMINISTRATION OF THE THYREOID GLAND IN MYXŒDEMA.

IN our issue for May 14th reference was made to the treatof myxœdema by the transplantation of thyreoid tissue and by hypodermic injections of a sterilized extract of the thyreoid gland, each method of treatment having been followed by beneficial results. But in either method there is an element of risk, the transplanted gland being liable to necrotic changes and the injections sometimes causing abscesses. In the *British Medical Journal* for October 29th Dr. E. L. Fox reports a case in which there were objections to the administration of hypodermic injections of thyreoid extract, and that substance was administered by the mouth in the form of a glycerin extract of half a sheep's thyreoid, one half of the mixture being taken an hour before breakfast, and the other half an hour before supper. This treatment produced an improvement in speech, facial expression, and general condition in a month. Subsequently half a thyreoid was minced and fried and taken twice a week, instead of once a week as ordered. This produced such weakness that the further administration of the gland was discontinued. At the time the report was made the patient's speech and appearance were normal, the œdema was gone, and menstruation had returned. In the same journal Dr. Hector W. G. Mackenzie reports a case of myxœdema treated by the internal administration of the fresh thyreoid gland, with rapid improvement in the patient's condition. He agrees with Dr. Fox as to the amount that may be given each day.

HEREDITARY BULLOUS EPIDERMIDOLYSIS.

A GENTLEMAN who was present at the third congress of the German Dermatological Society (Dr. Lesser apparently, from a condensed account in the *Monatshefte für praktische Dermatologie*, taken from the *Archiv für Dermatologie und Syphilis*) showed a family—of how many members, we are not told—affected with the hereditary pemphigus of Hebra, which the speaker termed epidermolysis [=epidermidolysis] bullosa hereditaria. On various parts of the trunk and limbs, especially in places where there was most friction by the clothing, there were numerous pigmented spots, white and somewhat atrophic foci, crusts, and blebs. In the mother, the morbid condition had been somewhat alleviated on the recurrence of the menses.

CHOLERA AND FLIES.

The Hamburg correspondent of the *British Medical Journal* states that nine flies that had been in contact with the intestines of persons dead of cholera in the necropsy-room at the Eppendorf Hospital were placed in separate flasks containing ordinary nutrient gelatin, and that in six of the nine flasks numerous colonies of comma bacilli were produced.

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending December 13, 1892:

DISEASES.	Week ending Dec. 6.		Week ending Dec. 13.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	2	1	3	2
Typhoid fever	17	7	13	4
Scarlet fever	112	13	88	15
Cerebro-spinal meningitis	0	0	3	0
Measles	61	11	110	14
Diphtheria	92	26	94	42
Small-pox	4	1	0	1

The New York Academy of Medicine.—The special order for the meeting of Thursday evening, the 15th inst., was an address on Precision in the Treatment of Chronic Diseases, by Dr. S. Weir Mitchell, of Philadelphia.

At the next meeting of the Section in Ophthalmology and Otology, on Monday evening, the 19th inst., Dr. Charles S. Bull will present cases illustrating tumors of the orbit and adjacent cavities.

At the next meeting of the Section in General Medicine, on Tuesday evening, the 20th inst., Dr. R. Van Santvoord will read a paper entitled Observations on a Case of Arterio-renal Disease.

At the next meeting of the Section in Obstetrics and Gynæcology, on Thursday evening, the 22d inst., Dr. Julius Rosenberg will read a paper on Accidental Hæmorrhage, and Dr. Henry C. Coe will read one on Pelvic Abscess after the Menopause.

At the next meeting of the Section in Laryngology and Rhinology, on Wednesday evening, the 28th inst., Dr. F. E. Hopkins will report a case of foreign body in the larynx, Dr. James E. Nichols will report a case of epithelioma of the tongue, and Dr. H. B. Douglass will read a paper on Some Points on Malignant Disease of the Nose.

The Alumni Association of the New York Hospital held its first annual meeting, followed by a dinner, at the Hotel Marlborough, on Saturday evening, the 10th. The president, Dr. Thomas M. Markoe, was in the chair, and nearly a hundred gentlemen were present at the dinner.

The Society of the Alumni of Charity Hospital.—At a meeting of the society held on December 7th the following officers were elected for the ensuing year: President, Dr. W. L. Carr; vice-president, Dr. R. C. Newton; secretary, Dr. Alexander Lyle; treasurer, Dr. A. T. Muzzy.

The late Dr. Robert Warren Greene.—The Society of the Alumni of Bellevue Hospital has passed the following preambles and resolutions:

Whereas, In the death of Dr. Robert Warren Greene the Society of the Alumni of Bellevue Hospital has lost a fellow-member who by his geniality and kindness of heart endeared himself to all; and

Whereas, The members of this society desire to show their sympathy and grief at the death of a man who gave such brilliant promise of an eminent and successful professional career, and whose nobleness of character, fine sense of honor, and many acts of charity and kindness to all who were in sickness and trouble were appreciated by those who knew him more intimately.

Resolved, That we express, in so far as words may, the realization of the great loss sustained not only by this society but by the profession and the community, and extend to his bereaved family our heartfelt sympathy in their affliction; and, as a fitting tribute to his memory, be it further

Resolved, That these resolutions be spread upon the minutes of this society and that a copy be sent to his family and to the medical journals of this city.

The late Dr. James R. Leaming.—At a meeting of the faculty of the New York Polyclinic, held on Thursday, December 9, 1892, the following preamble and resolutions were unanimously adopted:

Whereas, It has pleased Almighty God to remove our beloved president and emeritus professor of diseases of the chest and general medicine, Dr. James R. Leaming; therefore be it

Resolved, That in the death of Dr. Leaming we recognize the loss to ourselves of a faithful officer and a trusty counselor, and to the community at large of a skillful physician of great attainment and a loyal and eminent citizen, a man of rare geniality and cultivation, a stanch friend and a Christian gentleman, whose extraordinary gentleness, tender sympathy, and, above all, exemplary life had crowned his ripe age with honor, surrounded him with devoted friends, and made his career well worthy of study and of imitation. His memory will be universally cherished, and his name placed among those who are illustrious.

Resolved, That the deep sympathy of this faculty be extended to the family of the deceased and that the foregoing be incorporated in the minutes of this meeting and published in the leading journals, and a copy sent to the family.

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from December 3 to December 10, 1892:*

Happersett, J. C. G., Major and Surgeon. By Par. 6, S. O. 286, A. G. O., the leave of absence on surgeon's certificate of disability, granted in S. O. 178, November 18, 1892, Department of Dakota, is extended three months on surgeon's certificate of disability.

Heger, Anthony, Colonel and Assistant Surgeon. By direction of the President his retirement from active service on December 4, 1892, by operation of law, under the provisions of the act of Congress approved June 30, 1882, is announced, and he will proceed to his home. War Department, Washington City, December 5, 1892.

Naval Intelligence.—*Official List of Changes in the Medical Corps of the United States Navy for the week ending December 10, 1892:*

Stone, L. H., Assistant Surgeon. Detached from the Pinta and ordered home; one month's leave.

Young, L. L., Assistant Surgeon. Detached from the Mohican and ordered to the Pinta.

Harris, H. N. T., Passed Assistant Surgeon. Detached from the St. Louis and to wait orders to the Bancroft.

Means, V. C. B., Passed Assistant Surgeon. Detached from Naval Hospital, Norfolk, and ordered to the Saratoga.

Steele, J. M., Passed Assistant Surgeon. Detached from the Saratoga and ordered to the St. Louis.

Marine-Hospital Service.—*Official List of the Changes of Stations and Duties of Medical Officers of the United States Marine-Hospital Service for the eight weeks ending December 10, 1892:*

Purviance, George, Surgeon. Detailed as chairman of board to consider changes in uniform. December 6, 1892.

Hutton, W. H. H., Surgeon. Relieved from duty at Cape Charles Quarantine; to rejoin station. November 29, 1892.

Hamilton, John B., Surgeon. Granted leave of absence for six days. November 18, 1892.

Sawtelle, H. W., Surgeon. Granted leave of absence for seven days. November 9, 1892.

Austin, H. W., Surgeon. Detailed as member of board to consider changes in uniform. December 6, 1892.

Stoner, G. H., Surgeon. Granted leave of absence for fourteen days. December 9, 1892.

Godfrey, John, Surgeon. To proceed to the City of Mexico on special duty. November 22, 1892.

Irwin, Fairfax, Surgeon. To proceed to Europe on special duty. November 22, 1892.

Mead, F. W., Surgeon. Detailed as recorder of board to consider changes in uniform. December 6, 1892.

Carter, H. R., Surgeon. Relieved from duty at Cape Charles Quarantine; to rejoin station. October 20, 1892. Relieved from duty at Cincinnati, Ohio; assigned to duty at Norfolk, Va. October 26, 1892.

Banks, C. E., Passed Assistant Surgeon. Granted leave of absence for fifteen days. October 24, 1892.

Glennan, A. H., Passed Assistant Surgeon. Granted leave of absence for thirty days. October 26, 1892.

Bratton, W. D., Passed Assistant Surgeon. Granted leave of absence for thirty days. November 10, 1892.

Cobb, J. O., Passed Assistant Surgeon. Granted leave of absence for sixteen days. December 7, 1892.

Guitéras, G. M., Passed Assistant Surgeon. Relieved from duty at Gulf Quarantine; assigned to temporary duty at Baltimore, Md. December 1, 1892.

Geddings, H. D., Passed Assistant Surgeon. To report in Washington, D. C., for special temporary duty. November 30, 1892.

Hussey, S. H., Assistant Surgeon. To proceed to South Atlantic Quarantine for temporary duty. October 26, 1892.

Perry, J. C., Assistant Surgeon. When relieved at Norfolk, Va., to rejoin station at Mobile, Ala. October 26, 1892.

Young, G. B., Assistant Surgeon. Granted leave of absence for twenty-one days. October 27, 1892.

Stimpson, W. G., Assistant Surgeon. To proceed to Baltimore, Md., for temporary duty. December 5, 1892.

Gardner, C. H., Assistant Surgeon. Ordered to Portland, Or., for temporary duty. October 25, 1892.

Nydegger, J. A., Assistant Surgeon. To proceed to Gulf Quarantine for temporary duty. December 1, 1892.

Strayer, Edgar, Assistant Surgeon. Detailed as inspector of immigrants, port of Boston, Mass. November 22, 1892.

Society Meetings for the Coming Week:

Monday, *December 19th:* New York Academy of Medicine (Section in Ophthalmology and Otology); New York County Medical Association; Hartford, Conn., Medical Society; Chicago Medical Society.

Tuesday, *December 20th:* New York Dermatological Society (private); New York Academy of Medicine (Section in General Medicine); New York Obstetrical Society (private); Medical Society of the County of Kings, N. Y.; Ogdensburgh, N. Y., Medical Association; Baltimore Academy of Medicine.

Wednesday, *December 21st:* Harlem Medical Association of the City of New York; Northwestern Medical and Surgical Society of New York (private); Medico-legal Society; Medical Societies of the Counties of Allegany (quarterly) and Tompkins (semi-annual—Ithaca), N. Y.; New Jersey Academy of Medicine (Newark).

Thursday, *December 22d:* New York Academy of Medicine (Section in Obstetrics and Gynæcology); New York Orthopædic Society; Brooklyn Pathological Society; Roxbury, Mass., Society for Medical Improvement (private).

Friday, *December 23d:* Yorkville Medical Association (private); New York Society of German Physicians; New York Clinical Society (private); Philadelphia Clinical Society; Philadelphia Laryngological Society.

Saturday, *December 24th:* New York Medical and Surgical Society (private).

Letters to the Editor.

TYPHOID FEVER.

150 Fourth Street, San Francisco, *September 16, 1892.*

To the Editor of the New York Medical Journal:

Sir: Perusing my last number of the *Journal*, I find some more controversy about typhoid fever and its treatment. While I do not intend to continue a polemic, I should like to say a few words about its early diagnosis and its subsequent treatment, as found by my own experience and experiments in therapeutics, if I may use this expression. Should you deem them interesting enough for the medical fraternity, you are at liberty to publish them.

In one of our suburbs, not yet sewered and under a very lax *régime* of the health officer, is a block in which typhoid fever claims its victims nearly every summer and fall. My first case there was three years ago, where I had to attend a Miss B. who had "the fever." A long siege of sickness occurred, extending nearly three months, which I treated mostly on the expectant plan, meeting the symptoms as they arose. Another disagreeable part of it was that the patient—then a schoolteacher, now my wife—had always been under homœopathic treatment, and was quite averse to any "allopathic" medicines. Antipyretics had to be given in very small quantities, and produced generally a too rapid sinking of the temperature. Digitalis was likewise not well borne, and was superseded by one-drop doses of strophanthus with good results. The milk diet was not well borne either, and had often to be altered to broth and rice-water.

Since this time I have had quite a good deal to do in the neighborhood. The treatment I am following now is in general this: In the beginning I give from two to three doses of calomel where it can be borne—in women and homœopathic patients I have often to substitute citrate of magnesium—and then follow up with a mixture of carbolic acid (one part to tincture of iodine three parts), of which I give in the beginning one drop in half a wineglassful of water three times a day, increasing it to two and three drops eventually, if the patient bears it well. The fever I control by arterial sedatives, gelsemium, aconite, or veratrum, as indicated. Heart failure I meet with small doses of quinine and cactina pellets, one grain of the first and one of the latter generally at a time, and repeated as often as needed.

As diet, milk with lime-water, peptonized broths, and strained rice-water or barley-water: for men, milk with a tablespoonful of whisky three times a day.

With this treatment I generally have a good and speedy recovery in from four to six weeks. While the treatment is similar to the German "specific," I must thank Bartholow especially for the use of carbolated iodine, and am glad to state that in over twenty cases during the last three years I have lost but one patient under this treatment.

Alfred de Marconnay, M. D., Ph. D.

CHOLERA AND IMPORTED RAGS.

New York, *December 10, 1892.*

To the Editor of the New York Medical Journal:

Sir: Amateur excursions into the fields of sanitary science are to be deprecated as much as those into the fields of neurology, and as one who has been working in the former for more than a decade I desire to protest against the evasive and erroneous position taken by Dr. A. McLane Hamilton in the protracted correspondence he has carried on in the columns of your *Journal* with Mr. Augustine Smith.

The latter, in a letter dated September 22d, makes a certain definite request that Dr. Hamilton communicate to him any evidence the Medical Advisory Committee of the Chamber of Commerce may have "that the infection of Asiatic cholera has ever been brought into this country in imported rags" (see *Journal*, October 29, 1892, p. 496). To this letter Dr. Hamilton responded by reference to "the literature upon the subject to be found in the medical libraries of this city and elsewhere."

This was virtually no answer, for Mr. Smith is not a physician and would be probably unaware of the methods to be employed to secure these facts, *if they existed*, and under any circumstance the burden of proof rested upon those making the assertion that imported rags would convey cholera.

Nor does Dr. Jacobi's letter published in the *Journal* for November 5, 1892, answer the question, for the cases cited are those in which infection has occurred in Europe in rags introduced from one European country into another.

Dr. Hamilton's letters published in the *Journal* for November 19th and December 10th have similarly avoided the case at issue, and convincingly demonstrated his unfamiliarity with the question. He quotes a *proposition* made by the late Dr. Woodworth, that never has and never will be demonstrated, and, in fact, was made at a time that the cause of cholera was unknown. And as regards his definition of rags, I can but condemn his evasion, for the fourth and not the fifth definition of rag (a torn, worn, or formless fragment or shred of cloth; a comparatively worthless piece of any textile fabric detached from its connection by violence or abrasion) expresses the sense in which it is used by Mr. Smith.

I maintain that Dr. Hamilton spoke without knowledge when he replied to Mr. Smith as he did, and I insist that he can not give an instance in which cholera in this country was due to imported rags.

The duration of the viability of micro-organisms is not known, but it is probably dependent upon the presence or absence of light, air, and moisture, as well as the existence of a nutrient substance. The question therefore arises, whether the time in which rags are kept in bulk and are in passage across the ocean is not sufficient to accomplish the destruction of specific micro organisms, either by the causes above mentioned or by the ordinary micro-organisms of putrefaction. The single paper that has appeared on the bacteriological examination of rags (O. Roth, *Zeit. f. Hyg.*, 1890, p. 287) affords negative evidence.

As has been stated elsewhere, the committee could have replied that its recommendation had been based upon the action taken by England in the premises, as well as the recommendation of the more recent sanitary conferences, and that, as clothing and domestic rags had served as the media for the transmission of the infectious diseases, over-caution seemed more desirable than under-caution.

I would commend to Dr. Hamilton's attention the remarks made by Dr. J. S. Billings and Dr. H. P. Walcott, each of whom is well known in sanitary matters, at the meeting of the American Public Health Association in Washington in 1885 (vide *Trans.*, p. 377), regarding the danger of epidemics from imported rags.

S. T. Armstrong, M. D.,
Chairman, Section in Public Health,
New York Academy of Medicine.

Proceedings of Societies.

SOCIETY OF THE ALUMNI OF BELLEVUE HOSPITAL.

Meeting of December 2, 1891.

The President, Dr. Egbert Le Fevre, in the Chair.

A Case of Purpura Hæmorrhagica was reported by Dr. I. S. Haynes. The patient, a man, twenty-seven years of age, had a good family history, except that his mother had died of cancer. He had come to this country from Germany in 1880, and had lived most of the time in Alexandria, Va. In October, 1889, he had had night-sweats, with slight chills and fever, for about three weeks, and then began to bleed from the gums, tongue, and the inside of the mouth, and a pupuric eruption had appeared on the body and upper extremities, most marked on the latter. There had also been severe epistaxis, which had been checked by plugging the anterior and posterior nares. A second attack of bleeding had occurred the next month, and had been preceded by the same symptoms. The nares had not been plugged, and, after two days of medical treatment, the hæmorrhage had gradually subsided. The next year he had been further troubled by the presence of a tapeworm, and in December of that year, after experiencing pain in the back and leg, a purpuric eruption had appeared on the legs. It had lasted two weeks and had been accompanied by slight bleeding from the mouth. In January, 1891, he had come to this city and consulted Dr. Abraham Jacobi, who had prescribed a mouth-wash of glycerin and alum, and ergotine internally. On January 16th there had been some bleeding from the mouth, which had been stopped by the treatment just mentioned. On January 19th there had been a profuse hæmorrhage from the left nostril, and it had been at this time that Dr. Haynes had first seen him. He was associated in the treatment of the case with Dr. Herman, and, at the suggestion of the latter gentleman, morphine was given in addition to the ergotine. The epistaxis was checked by means of a very effective tampon extemporized from a catheter and a condom. By filling the rubber bag with water, both nares could be occluded. Dr. Jacobi saw the case that day in consultation, and advised the use of ergotine, two grains every hour, and a continuance of the morphine. The bleeding was controlled, and did not recur when the tampon was removed twenty-four hours later. The administration of male fern effected the removal of the tape-worm on January 26th. He had had two or three slight hæmorrhages since this time, the last one being accompanied by an unusually dark eruption. The patient's diet previous to coming under medical treatment had consisted largely of raw meat and sausages, but a more restricted diet seemed to have no effect on his condition. At one time quinine and arsenate of iron had been prescribed, but had not been taken. There was no history of malaria other than the irregular chills and fever already mentioned. The chief interest turned upon its ætiology, and the probable effect of a change of residence.

Dr. W. Evelyn Porter asked if there were any evidences of cirrhosis, as he had seen a very similar case in which cirrhosis was a marked feature.

Dr. Haynes said that he had observed no evidences of cirrhosis, although no examination had been made to directly determine this point.

The President said that he had seen a number of these cases among people who had come from Panama. They had never had an attack of typical chills and fever, but there was a history of chills and night-sweats and a severe cough, followed by a hæmorrhagic eruption and by bleeding from the mucous membranes. Nearly two thirds of these cases were in women, and bleeding occurred from the rectum and the vagina as well as from the mouth. The case just presented was, in his opinion, one due to malarial infection, in which the malarial poison had spent itself upon the blood and the nervous system. An analogous class of cases developed among some foreigners whose occupation compelled them to work in the fumes of lead. They were attacked with bleeding mostly from the throat and nose, followed by the appearance of petechial spots. There was constriction of the blood-vessels, as well as other evidences of lead-poisoning. In such cases the poison seemed to exert its effect first on the blood-making organs, and secondarily on the blood-vessels. In one of these cases from Panama there was not only bleeding from the vagina and rectum, but, about once in twenty-one days, this woman had hæmaturia, with one or two per cent. of albumin in the urine, with cells from the pelvis of the kidney. There were no casts. The treatment which he had found most satisfactory was the internal administration of the bromide of arsenic, beginning with doses of one fortieth of a grain and pushing it up to the physiological effect. Some of these patients were benefited by letting them partake freely of lemon juice.

A Case of Spastic Paralysis was presented by Dr. R. H. Sayre. The patient was a little girl who was affected with spastic paralysis chiefly in the lower extremities, although there was some inco-ordination of the upper extremities. She had been born by a difficult labor after the operation of turning. She had been much asphyxiated, and had been with difficulty resuscitated. The spastic condition had existed ever since. It was probable that at the time of birth, as a result of the asphyxia, a clot had formed at the vertex and had compressed the motor centers of the legs. The paralysis was typical, and the reflexes were decidedly exaggerated. Previous to coming to him she had been treated in two dispensaries with galvanism and faradism, and in a third by keeping the legs for a long time in the straight position by means of plaster of Paris. Dr. Sayre had been treating her for about six weeks by faradism and massage and stretching out the contractured tissues—the posterior muscles of the legs and the adductors. The child had also been instructed to make certain movements of the fingers. Under this plan of treatment her speech had improved somewhat, and her excessive nervousness had been decidedly diminished.

The treatment which he had adopted often proved of great service in these cases. The irritation in the brain was frequently so great that certain muscles were so strongly contracted that the opposing muscles could not exercise their functions; hence, by performing tenotomy and putting a splice in the tendon, this opposing force was greatly reduced and the healthy muscles were allowed to act. He recalled one patient who was at one time much worse than the one just presented, and who was now so much better that an ordinary observer would hardly notice any abnormity.

A Case of Congenital Defect of the Urethra and Acquired Deformity of the Hip.—Dr. Sayre also presented a case of this affection. This patient, now seventeen years of age, was said by the mother to have had no deformity of the hips up to the age of eleven years, at which time she had left her mother and went abroad. The urethra was congenitally deficient, causing a frequent dribbling of the urine. The clitoris was bifid, the vagina was very small, and she usually menstruated from the bladder. The opening at present was sufficiently large to admit passing the finger into the bladder and exploring it. About five years ago she had been kicked in the left hip, but she had not been sufficiently hurt to go to bed. Gradually this hip had become deformed, and when the girl returned to this country the mother had been greatly surprised at the amount of deformity. She had then been brought to the speaker, who had found the left hip dislocated, the trochanter being two inches above Nélaton's line; the left thigh had been strongly adducted and flexed. Notwithstanding this deformity, which resembled that of the third stage of hip disease, there had been but little or no pain in connection with its development and none on moving the joint. As the bladder could only be prevented from leaking when the girl's legs were crossed, she had developed a habit of keeping her limbs as nearly as possible in this position, and, although it had been alleged that spontaneous dislocation of the hip from muscular contraction never occurred except in cases of paralysis, he was of the opinion that the deformity in this case was the result of this habit. There was no history of sufficient traumatism to cause this deformity.

With the idea of forming a new acetabulum for the head of the femur, he had, with the assistance of Dr. Hotchkiss, cut down and divided the muscles attached to this hip joint, but he had then found the head of the bone in such good position on the dorsum of the ilium that he had been doubtful if the operation contemplated would improve her condition; hence he had contented himself with getting the legs parallel. At this time Dr. Hotchkiss had thought that he detected crepitus, indicating fracture and fibrous union, but on this point the speaker had differed with him. The wound had healed slowly after the operation, owing to the dribbling of urine. The shortening was two inches. Since she had been walking around she had begun to relapse into the condition she had presented before the operation. He thought that an operation which would prevent the dribbling of urine would remove the cause of her deformity.

Diffuse Tuberculosis of the Head and Neck of the Femur.—Dr. L. W. Hotchkiss presented a specimen. The patient was seventeen years old, and had been in the hospital for about six weeks, suffering such great pain that morphine had been necessary in addition to the extension. As the process had been looked upon as a tubercular one, the hip joint had been excised. The capsule was found to be thickened, the great trochanter and neck were carious throughout, and the interior of the head of the bone was soft and filled with tubercular material, which, in the fresh state, was red. There was no suppuration.

Malignant Diseases of the Uterus, with Especial Reference to Operative Treatment.—A paper with this title was read by Dr. W. Evelyn Porter. (See page 679.)

Dr. Andrew F. Currier thought that the emphasis laid by the author on the importance of early diagnosis was well merited, as the forlorn results so frequently recorded were most commonly due to a neglect of the first warning symptoms. Hæmorrhage occurring at irregular periods should always excite alarm. Pain was not usually a very prominent symptom in the early stages of the disease. He had seen women who were apparently pictures of perfect health whose uteri were so involved in the cancerous process that an operation was well-nigh hopeless. Cachexia was also seen in connection with benign growths, such as polypi; hence this symptom, like that of a watery discharge, upon which so many laid stress, was not infrequently misleading.

In about ninety-five per cent. of the cases of epithelioma it was claimed that the growth begun in the epithelium of the cervical portion of the uterus. Under such circumstances, with few glands involved and but little cell infiltration, was it justifiable to remove the entire uterus, both on account of the possibility of future conception and of the risk to life? Personally, he had reached the conclusion that in those cases where the disease was not advanced the cervix uteri should be removed, as the operation was without mortality, was very easily performed, and if the disease was confined to a small portion of the uterus it was sufficient. But in the later stages, where the general health was suffering, the logic of the situation admitted of only one answer—that the entire organ should be removed. The statistics of high amputation showed that this operation was more difficult to perform than the more radical one, that the uterus was no longer capable of reproduction, and that the tissues were left which might possibly be a source of further cancerous development. For these reasons he had advocated the radical operation in advanced cases.

The operation had sufficient age now to say with positiveness that these cases of cancer could be cured—not of the cancerous diathesis, but of the disease, if it existed at the time of the operation. Recurrence was frequently due to the fact that the tendency to the disease could not be eradicated by any operation. Freund's operation, which was brought forward about the year 1875, was adopted and followed most enthusiastically for a time, but the mortality after the operation was very great, and in the cases which survived recurrence was rapid. Notwithstanding this, Freund had recently published a case where immunity had been secured for ten years.

The statistics of vaginal hysterectomy offered better grounds for hope. In Germany, where the technique of this operation was carried out most successfully, the average mortality from this operation was 8·4 per cent., and the least percentage—that obtained by Kaltenbach—was 3·3 per cent. There were many cases on record where immunity had lasted for from two to five years or more, and in a recent paper by Dr. Baker a large number of cases had lived for periods varying from three to ten years. These statistics seemed to prove the truth of what was said years ago by Virchow and Waldeyer—that cancer was at first a local disease.

He was thoroughly in favor of the palliative operation for advanced cases, for he believed with Schröder that it was our duty to give relief in this way, if only for a few months. Palliative operations would be more successful if more thoroughly carried out. Such operations were often very bloody, and more difficult than extirpation of the entire organ. Not only should all the broken-down tissue be removed with the sharp curette, but the thermo-cautery or a solution of the chloride of zinc should be applied, and the operation repeated as often as might be necessary. The operation through the vagina was in most cases more easily performed than that through the abdomen, and its steps were almost a reversal of that operation. Dr. Currier agreed with the author as to the inadvisability of leaving clamps *in situ*, as the added danger and discomfort more than compensated for the slight saving in time. In one case he had seen, where clamps were used, the hæmorrhage became so profuse that it was necessary to open the abdomen, and then it was found that the intestine was in the grip of the forceps. Had it not been for the accidental circumstance of opening the abdomen the patient would have died.

Dr. C. C. **Barrows** thought that the whole uterus should be removed as soon as it was determined that the growth was malignant. He had recently removed a uterus which was not very much enlarged and in which the disease was apparently limited to a small space on the cervix. There were few characteristic symptoms, yet after the operation a careful examination of the uterus showed that the whole endometrium up to the fundus was the seat of cancer. For this reason, he believed the operation should always be radical.

He did not agree with the author in his wholesale condemnation of clamps. Where the uterus was large or could not be easily drawn down, or where there were thickenings or adhesions about the broad ligament preventing its being easily handled, the ligature was the better method; but ordinarily the ligature was more difficult to apply, and when applied caused a great deal of tension and included too much of the tissues in its grasp, thus inviting hæmorrhage later on. All clamps working on the scissors principle should be avoided as dangerous. The clamp which he exhibited—that of Greig Smith—was a perfectly safe one. It was made in two parts which were introduced separately along the finger as a guide. This brought the stump and its vessels into full view, and, after forty or sixty hours, a knife was run along a groove in the instrument, thus cutting off the slough which had formed. After this a douche was given. The wound usually healed in about ten days, and the patient was well in two weeks. The method shortened both the operation and the period of convalescence.

Dr. **Robert T. Morris** thought that those who had read Heidenhain's article on the wide diffusion of cancerous deposits would feel strongly inclined to remove the whole uterus in every case. He disliked to operate in small openings; with the more general use of the Trendelenburg posture, more cancerous uteri would be removed through an abdominal opening. He did not see why, after such operations, the patients should be placed for forty-eight hours upon a water diet. The philosophy of this diet was explained by Tait, who showed that in the removal of abdominal growths the manipulation of the intestines during the operation was productive of considerable shock to the sympathetic plexuses in the abdomen; and, as a result, digestion was interfered with and the food fermented in the alimentary canal. But, under ordinary circumstances, the removal of a cancerous uterus was attended by very little shock to the sympathetic, and hence he saw no necessity for such a diet.

He had experimented a good deal with methyl blue of late with the hope of finding some method of retarding the growth of cancer by destroying the micro-organism, but his injections had failed to produce any such result.

Dr. **Parker Syms** said that his personal experience was limited to the palliative methods, because he had always believed that the larger operations should be done in the early stages. In all cases of cancer, the only hope was from very early and very radical removal of the disease, and hence the entire uterus should be removed. The reason for immunity in many cases of high amputation of the cervix was probably that the cases were selected, as this operation was never done where there was extensive disease. He saw no reason why clamps should not be useful in certain cases. The osteoplastic operation of Kraske, he thought, would probably prove a very valuable addition to our resources. Although a formidable operation, it might be used where the disease had involved the posterior portion of the vagina and the rectum by an amputation of the rectum and the removal of the uterus. In one case of extensive amputation of the rectum for cancer he had removed the posterior wall of the vagina.

Dr. **Allen** said that he had noticed the author recommended cleaning the abdomen and preparing the patient for a possible abdominal section. He desired to know what particular complication the author had in mind in giving these directions.

Dr. **Porter**, in closing the discussion, said that the necessity for performing abdominal section under these circumstances usually arose from some inflammatory condition of the tubes. In the cases in which Dr. Currier thought high amputation was specially indicated he would be inclined to favor complete removal of the organ for the reason that the extent of the disease was unknown. He was surprised that Dr. Barrows obtained such prompt healing with the clamps; this was entirely opposed to his own experience. The reason for keeping the patients on a diet of hot water was that the stomach was extremely irritable after such operations, and where the relations of the pelvic floor were so greatly disturbed as after vaginal hysterectomy, retching or vomiting was an unfortunate complication.

SOUTHERN SURGICAL AND GYNÆCOLOGICAL ASSOCIATION.

Fifth Annual Meeting, held in Louisville, Ky., on Tuesday, Wednesday, and Thursday, November 15, 16, and 17, 1892.

The President, Dr. J. **McFadden Gaston**, of Atlanta, Ga., in the Chair.

An Address of Welcome was delivered by Dr. L. S. **McMurtry**, of Louisville, chairman of the committee of arrangements, the response to which was made by the president.

Personal Recollections of the late Dr. Benjamin W. Dudley, of Lexington, Ky., and his Surgical Work.—In a paper with this title Dr. Bedford Brown, of Alexandria, Va., paid an eloquent tribute to Dr. Dudley and characterized him as the greatest lithotomist that this country had ever produced and the most successful in the history of the world. The speaker's close relationship to Dr. Dudley as private pupil and assistant for two years had enabled him to present a clear and faithful sketch of his character and surgical work.

Experiences in Pelvic Surgery.—Dr. A. V. L. Brokaw, of St. Louis, in a paper on this subject, said that of all the surgical problems difficult to solve, it might be truthfully said that those met with in the pelvis were the most trying. The speaker knew of no surgical work which would compare with the experiences met with in the pelvis; a diversity of conditions, complications, and unexpected happenings were ever presenting. In a series of many operations, but few would be alike in every particular. As his experience became larger he was free to confess his inability to correctly diagnosticate the character of abdominal and pelvic troubles. He had diagnosticated pyosalpinx and had found extra-uterine pregnancy; had diagnosticated extra-uterine pregnancy and had found pus; ovarian lesions, and had found the trouble located in the tubes and *vice versa.* When well-defined pelvic lesions existed, nothing short of radical measures succeeded. The one condition above all others where exploratory incision should be adopted was suspected extra-uterine pregnancy. It was good surgery to open the abdomen and not wait for all the classical signs to appear. The symptoms of extra-uterine pregnancy were so frequently unreliable and obscure that he was firmly convinced a radical position should be taken. A case was cited in point.

Dr. William Warren Potter, of Buffalo, desired to indorse that portion of the paper pertaining to an early exploratory incision in cases of suspected extra-uterine pregnancy.

Dr. Joseph Taber Johnson, of Washington, said that as soon as the surgeon had diagnosticated something in the abdominal cavity that ought not to be there, anatomically or physiologically, and was histologically wrong, it should be removed. An exploratory operation was justifiable in cases of suspected extra-uterine pregnancy, and the surgeon should base his further procedures upon what he found after making the exploration.

Dr. W. E. B. Davis, of Rome, Ga., thought the pendulum relative to surgical interference had swung a little too far. He believed that a great many of the so-called "tinkerers," who succeeded in relieving their patients, did not accomplish it so much by the local treatment they used as by having patients under their care, keeping the bowels open, giving constitutional treatment, seeing them regularly, etc. While, by so doing, they might not be cured in all cases, they were greatly benefitted. Regarding the diagnosis, surgeons who were opening the abdomen constantly would rarely give a positive diagnosis without doing so.

Craniotomy upon the Living Fœtus is not Justifiable.—Dr. Cornelius Kollock, of Cheraw, S. C., read a paper with this title. He said this operation implied the death of the fœtus and a frightful mutilation of its body, often accompanied by serious lacerations of the vagina and adjacent tissues of the mother. Recent advances in obstetrics, gynæcology, and abdominal surgery had contributed largely to a demonstration of the fact that a timely resort to Cæsarean section in pelvic obstruction was the great factor of success. In Germany, out of 149 cases of contracted pelvis, 109 mothers and 136 children had been saved. If craniotomy had been done in those cases, 149 children would have been destroyed and probably 50 women —perhaps more—making a sacrifice of at least 199 lives. In many of these cases exhaustion had supervened and septic influences had already been excited. This, added to impaired disposition to union by first intention, caused by contusion of the parts involved in the uterine incision, lessened the woman's chances for recovery materially. Zweiffel had been successful in 29 cases out of 30; Schauta had done Cæsarean section 15 times without a single death. Recently of 18 operations done in Louisville 14 had been successful. Of 8 in Ohio, 6 had been successful. Dr. Price had done Cæsarean section a number of times successfully. The reader was firmly convinced that 85 or 90 per cent. of the patients with obstruction of the pelvis precluding the birth of the fœtus in the natural way might be saved by a timely resort to Cæsarean section.

Dr. W. D. Haggard, of Nashville, emphasized the position taken by Dr. Kollock. He believed that when the profession fully realized the immense gain in the number of lives saved by Cæsarean section over craniotomy there would be no doubt as to its superiority to the latter operation.

Dr. Hunter McGuire, of Richmond, favored Cæsarean section. He did not favor the procedure of taking the uterus out of the abdominal cavity and then opening it. He thought this added very much to the danger of the operation, rendering a a larger opening necessary, exposing the cavity of the abdomen a long time to the atmosphere, etc.

Dr. McMurtry said that a few years ago it would have been impossible for one to present the views that Dr. Kollock had offered without meeting with violent opposition. Cæsarean section had then been regarded as an extremely desperate operation, and until recent years the mortality therefrom had been very great; but since it had been carried to the present degree of perfection by Sänger and others it had strengthened the opinions of abdominal surgeons, who now considered it preferable to craniotomy. Within the last two months symphyseotomy had again been brought before the profession and practiced as an alternative in certain cases for Cæsarean section. What the future of the former operation was to be we were not prepared to say.

Dr. Arch. Dixon, of Henderson, Ky., had advised Cæsarean section in a case in which he had been called in consultation, but the family physician had insisted upon his doing craniotomy, which was done, and, while every precaution had been taken with regard to rendering the field of operation aseptic, the woman had been attacked with pelvic peritonitis and had died within four days. He believed a Porro operation would have saved the life of the woman and perhaps that of the child.

Extensive Hæmatocele resulting from Rupture of a Tubal-gestation Sac into the Broad Ligament.—Dr. W. D. Haggard reported a case. Although the fœtus had not been found, that it had been a case of tubal pregnancy with rupture into the broad ligament was clearly established by the clinical history and post-mortem appearances, summarized as follows: (1) The patient confessed having had intrapelvic trouble previously (presumably gonorrhœal), for which she had been treated locally. (2) At the time of the accident, caused by jumping from a wagon, her menses had been past due; as to how long, her statements had been misleading. (3) There had been a fitful yet persistent flow from the uterus during her entire illness. (4) Paroxysmal, colicky pains in the lower abdominal and pelvic regions had been of frequent occurrence. (5) The existence of a tumor above the pubes, which she had probably mistaken for a gravid uterus. (6) Her persistent refusal to submit to a digital examination, probably fearing the detection of her pregnant state. After death there had been found an enlarged and softened condition of the uterus, with a patulous os, showing escape of a sero-sanguineous, stringy fluid; enlargement of the left Falloppian tube with a well-defined cavity from which the fruit sac had escaped; a deciduous membrane, as revealed by the microscope; and discoloration of the rectum, produced by blood dissection around it, producing constriction and partial death.

Fibroid Tumor of the Uterus; Pregnancy; Rupture about the Fourth Month; Operation.—Dr. S. M. Hogan, of Union Springs, Ala., reported a case. The woman, colored, had been twenty-eight years of age, and, from the symptoms and history of the case, he had been satisfied there was a rupture and the probabilities had been that it was about the fourth month of gestation. He had also been of the opinion that the rupture had not immediately destroyed the fœtus, but that it had continued to grow in its abnormal position. He felt sure that if he had operated immediately after the rupture, the patient's life would have been saved. In all cases of rupture he would advise Porro's operation to be done immediately; and he thought that in all cases where the tumor was large or multiple, intramural or subperitoneal, with a sacciform dilatation of the posterior segment of the uterus, and the os above the pubic bone, or inaccessible, the same operation should be done. In all cases where the tumor was in front of the child, or blocking the passage, it should be done, if the pregnancy had advanced to the full time, or there was hæmorrhage, or rupture of the membranes, indicating that an abortion or miscarriage was imminent.

A New Operation for the Radical Cure of Inguinal Hernia.—Dr. George A. Baxter, of Chattanooga, Tenn., read a paper on this subject. He presented an operation radically different in principle from any before given. It consisted in a prolongation of the incision, after the ordinary management of the sac and after ligation, through the internal ring into a more or less extensive laparotomy as the exigencies of the case demanded; lifting the neck of the sac into the abdominal opening above the ring and its fixation there by a deep suturing; cutting off the sac close above the peritonæum and its closure by buried suture; and a final closure of the abdominal opening by this and a more superficial set of sutures which passed across above the closed sac and peritonæum and underneath the deep fasciæ, and were intended to approximate the homologous tissues of the abdominal wall. The ring was closed with crucial sutures dipping over the spermatic cord and traversing the tissues, and the inguinal canal closed with deep sutures alone.

He specified the following points of originality: A line of incision suitable for any inguinal hernia, by the fixation of the sac above the peritonæum a deflection of all abdominal expulsive force from the ring and canal, the thickened lining of the internal ring, and the method of closure of abdominal incision. The advantages alleged were: Quick cure with avoidance of the necessity of a truss, deflection of expulsive force from the internal opening and canal to the abdominal parietes. Advantage in being able to approach the constriction either from without or from within. Avoidance of the necessity for traction on the sac or its contents. Ample room for treatment in diseased conditions of the sac or contents.

The Cure of Inguinal Hernia in the Male.—Dr. Henry O. Marcy, of Boston, followed with a paper on this subject. (To be published.)

The Treatment of Umbilical and Ventral Hernia.—Dr. W. H. Wathen, of Louisville, read a paper with this title. He said that the importance of studying carefully the best methods of treating hernia was now especially emphasized because of the increased frequency of the disease following laparotomy, and especially because the modern methods of surgery made the operation far less dangerous than it formerly had been. The operation for radical cure of hernia in the practice of the best surgeons, except in extreme cases, was practically devoid of danger, and the result might be made permanent. Modern antiseptic and aseptic precautions had practically excluded the danger which had formerly arisen from infective peritonitis. There were many cases of ventral hernia that could have been prevented had the proper treatment been carried out in the closure of the abdominal wound. In order that there might be no hernia following laparotomy it was necessary to get perfect union by adhesion of all the layers of tissue forming the abdominal wall—the peritonæum, the muscles, the deep and superficial fascia, and the skin. But especially must we get union of the layers of fascia, for unless this was done the other layers would gradually separate and hernia would follow. This could not be done unless we succeeded in keeping the cut edges of the fascia in even and perfect apposition long enough for strong union to occur.

The Treatment of Ununited Fractures by Resection.—Dr. W. O. Roberts, of Louisville, read a paper on this subject. He said that the treatment of ununited fractures by resection was more than a hundred years old, White, of Manchester, having done the first operation in 1760. In consequence of the great mortality attending the operation it had been abandoned until it was revived by Sir Benjamin Brodie. In 1805 Horeau, after having divided the fragments obliquely, had fastened them together by tying a metallic wire around them. Rodgers, of New York, in 1838, had passed the wire through holes drilled in the fragments and had then twisted it. Since then other surgeons had used sutures of various materials in the same way, some of them leaving the sutures in permanently, while others had removed them after union of the fragments had occurred. Some, instead of drilling the bone, had passed the sutures simply through the periosteum. Screws, nails, ivory pegs, and clamps had been used for the same purpose. In the long bones, when coaptation of the fragments could be secured, the reader felt satisfied that resection and a fixed dressing would be followed by just as good results as when sutures or other contrivances were used for fastening the ends of the fragments together.

Intestinal Anastomosis by a New Device.—Dr. H. Horace Grant, of Louisville, contributed a paper on this subject. For more than a year he had been endeavoring to perfect some instrument to simplify direct suture, but it had been so difficult to get just what he had wanted that time had not been allowed since the completion of the instrument to test it fully. It was to be used only after resections. The two blades of the clamp were oval scissors, a quarter of an inch in transverse and two inches and a half in longitudinal diameter. The arms of the clamp were made long enough to allow of their introduction full five inches. After the gut was exposed, a strand of iodoform gauze was passed through the mesentery, and constricted the intestine fully six inches from each point of intended resection. The mesentery was tied off over the portion to be resected with fine silk, in two-inch loops, cut close and dropped in the usual way. When the resected portion was removed the gut ends could be washed out if desired. While the two ends of the divided intestine were held parallel, one blade was entered in each, allowing at least an inch and a half of gut beyond the proposed anastomotic opening to permit of invagination of the ends. The clamp was tightened, and the two surfaces thus firmly held were rapidly stitched together by a continuous overhand Lembert suture of fine silk. Two rows of parallel sutures, as suggested by Abbe, might be used if desired, though it had seemed that one was enough according to the author's experiments. The work could be done far more rapidly and accurately than without the clamp. When the suturing was finished the clamp was tightened if necessary, and a long-bladed dressing forceps passed into the bowel and the oval plug removed or pushed in. The scissors action of the blades, together with the ten or fifteen minutes' pressure, prevented any hæmorrhage. The clamp was now withdrawn and the ends were invaginated in the usual way.

Dr. Brokaw thought that the instrument was a good one, and said that anything which materially assisted the surgeon in doing intestinal anastomotic operations rapidly was of great value; time was a most important element. The use of rings, plates, and mats in the past had been bad. He believed that we could suture far more rapidly with Dr. Grant's instrument than with any other device he had thus far seen.

Dr. W. E. B. Davis, of Rome, Ga., believed that a large number of operators had abolished mechanical devices in doing intestinal anastomosis. His brother (Dr. John D. S. Davis) had devised a rubber plate and mat, but now preferred not to use the plate. In the case of resection of the bowel, he thought Dr. Grant's device was an ingenious one, inasmuch as it would facilitate the work of the surgeon and enable him to do an operation very quickly. He had conducted a series of experiments in an effort to do away with mechanical devices by which surgeons might use the end-to-end operation by splitting up the bowel. While the operation was successful in some cases, the strain on the circulation was too great, and he now condemned the operation.

Dr. G. Frank Lydston, of Chicago, directed attention to Dr. J. B. Murphy's anastomosis button, a recent device by which, he said, cholecystenterostomies could be done in from eight to twelve minutes.

The Compatibility of Conservative and Aggressive Surgery was the subject of the President's address. He said that the circumspect philosophy of former days taught us that what man had done man might do. But the developments of more recent times said that whatever was practicable might be undertaken without regard to precedents; conservative and aggressive processes were combined in progressive surgery. Conservatism in the use of all the appliances of surgery was not inconsistent with the application of the most energetic means of relief in structural disorders. A misapprehension existed with many of our profession as to the true sphere of progressive surgery, and it was the purpose of the author on this occasion to make a distinction between rashness in the employment of operative measures and boldness in the use of surgical means of relief when clearly indicated. Real advances in surgical practice had not been the result of cutting and slashing without due consideration, but had accompanied the painstaking investigation of the conditions requiring the knife and caution in the performance of operations. As a preliminary to any surgical procedure of a radical nature a correct diagnosis was essential; but to arrive at a proper understanding of a deep-seated disorder it was often requisite to do an exploratory operation of greater or less magnitude. The information based upon such an exploratory measure served as a guide to any further surgical procedure. Ignorance and inexperience often led to sad results in meddlesome surgery, when limbs were sacrificed or organs mutilated to gratify the desire to figure as a bold operator on the part of a would-be surgeon. In such cases no member of the profession should shield the culprit from the charge of malpractice or from the assessment of damages by a court of justice.

A Plea for more Rapid Surgical Work.—Dr. Ap Morgan Vance, of Louisville, read a paper on this subject in which he said that a great number of surgeons paid little attention to the time consumed in an operation or to the nicety of manipulation and dexterous use of instruments that our forefathers had prided themselves upon. He had seen on numerous occasions the work of our most distinguished surgeons, and had seen deaths occur from prolonged anæsthesia and too much time consumed in an operation which would not have taken place if much unnecessary time had not been wasted. The habit of starting the anæsthetization before all preparations were completed was very reprehensible.

The Surgery of the Ureters.—Dr. Charles A. L. Reed, of Cincinnati, contributed a paper with this title. He said that the surgery of the ureters was one of the developmental subjects of abdominal surgery. These out-of-the-way conduits exercising functions that were vital in character were liable to diseased conditions which baffled the resources of the diagnostician and taxed the ingenuity of the operator. For purposes of diagnosis the physical means at our disposal might be briefly summarized as follows: (1) Exploration of the lower end of the ureter by digital examination through (*a*) the vagina, (*b*) the rectum, and (*c*) the bladder; (2) exploration of the lower end of the ureters by the sound passed through the urethra and bladder into the ureters; (3) exploration of the central portion of the ureters by abdominal lumbar palpation—an expedient of practical value only in cases of extreme ureteral distention occurring in very thin subjects; (4) exploration of the upper end of the ureters by exploratory nephrotomy. Each of these several expedients might be amplified. Since catheterism of the ureters had been popularized in this country, chiefly through Kelly, and since the technique of the procedure had become understood by those who had studied it, the diagnosis of disease within and surrounding these tubes was vastly more common. The digital exploration of that portion of the ureters lying within easy reach from the vagina or rectum was readily practiced by those who had carefully studied the anatomy of the parts. Digital exploration through the urethra and bladder was an easy expedient so far as the surgeon was concerned and often led to the elucidation of important pathological facts, but the author was forced to believe that it was not without danger to the patient. He had been forced into this belief by one case of incontinence lasting for nearly a year and by two cases of weakened power of retention, one of which was now of quite two years' standing. Abdominal section for the diagnosis of ureteral conditions, notably in cases of suspected calculus, was entirely justifiable. He then reported a case of peri-ureteritis, stricture, and kolpo-cysto-ureterotomy, with recovery. The second case was one of cicatricial stricture of an excised ureter, nephrydrosis, and nephrectomy, with recovery. The third case was one of nephropyosis, nephrectomy, and remaining urethral disease.

Specialism in Medicine, particularly as related to Surgery and Gynæcology.—Dr. William Warren Potter, of Buffalo, read a paper which he summarized as follows:

1. There is essential need for specialists. Divisions of labor in every field are demanded, and nowhere more than in medicine.

2. Specialists being a necessity, they must equip themselves by years of study, and devote themselves to a still greater number of years of general practice before they are justified in offering themselves as specialists.

3. They must conduct themselves in such a way as to merit the respect of the general practitioner, and to invite his co-operation in their work.

4. The unwritten ethics of specialism demands that there shall be reciprocal relationship maintained, not only among specialists themselves, but also between specialists and general practitioners.

5. The opportunities for perfection in special lines of medical study are so great, and medical literature in both journalistic and text-book form is so rich, that an awful responsibility is entailed.

6. The schools ought to discourage any and all students who give promise of entering upon the practice of a specialty as soon as the college doors are passed, and before the swaddling clothes of the professional tyro are slipped.

The General Practitioner as a Gynæcologist.—Dr. R. M. Cunningham, of Birmingham, Ala., followed with a paper with this title. He said that the general practitioner should not undertake work that could be done better and more safely by the specialist, provided one was obtainable. He should be willing to do and attempt the most radical and dangerous operations when necessary to save life, provided a specialist or one better prepared to do the work could not be obtained. In cases not necessarily dangerous, or in which life did not become more or less a burden, but in which a cure could be effected only by a radical procedure, although they might be materially benefited or symptomatically relieved by milder methods, he should adopt the latter and not the former. In many cases the field was clearly his own, belonged to him, and he should be prepared and competent to treat them with safety and success.

Specialism in Medicine.—Dr. W. F. Westmoreland, of Atlanta, read a paper on this subject. He said that there were two kinds of specialist—the one with his preconceived ideas, which became warped, who always suffered from astigmatism, etc. The other was the man who had worked his way by his generally acknowledged ability in some particular line.

A Preliminary Report on the Morphology of Ovarian and Myomatous Tumors.—Dr. Howard A. Kelly, of Baltimore, read a paper with this title. He said that the form of abdomen characteristic of large ovarian cysts was a globular or ovoid distention of a part or the whole of the abdominal wall, pushing out the infra-umbilical portion much more than the supra-umbilical, at least so long as the tumor occupied the lower half or two thirds of the abdomen. This enlargement was uniform in parovarian cysts and polycystic tumors exhibiting but few bosses, due to the fact that the latter were composed of one or two large cysts associated with a mass of smaller ones, and the large cyst was best accommodated in the median line in the distended concave anterior abdominal wall, and the smaller ones at the side or back consequently did not show. Prominent exceptions to the general rule just enunciated—that pelvic tumors distended for the most part the inferior abdominal zone—were the notable stretching of the upper abdomen in very fat women with large ovarian tumors and the like distention in rhachitic dwarfs in advanced pregnancy. Nodular myomata, on the other hand, stood out in marked contrast to the smooth outlines of cystic tumors in giving to the lower abdomen a lumpy, bossed appearance, thus exhibiting through muscles and skin a softened exaggeration of their irregular outlines. This peculiarity still remained prominent, although softened, after these tumors had undergone fibrocystic degeneration. Cystic tumors filling the pelvis and part of the abdomen were but rarely found to originate in some upper abdominal tumor. The author presented a photograph of an enormous kidney, containing over a gallon of pus, extending from the pelvic floor up through the abdomen and pushing up the left ribs.

The Present Status of Drainage in Surgery.—Dr. A. M. Cartledge, of Louisville, read a paper on this subject. He presented the following summary:

1. The principle of artificial drainage in surgery, while very ancient, is imperfectly understood, and is oftentimes as much a factor for evil as for good.

2. Though our knowledge of the principles which govern a healthy regeneration of wounded structures has greatly advanced, and our progress in wound therapeutics kept pace, we fail to appreciate how artificial drainage can be altogether dispensed with in surgical practice.

3. To lessen the use of artificial drainage it is necessary to thoroughly apply the principles of asepsis and antisepsis, combined with buried sutures, fixation, and alimentary or systemic drainage.

4. Where from any reason exudation can not be controlled, its removal by drainage is a safer surgical measure than any attempt at sterilization *in situ.*

5. The time required for primary drainage is from twenty-four to sixty hours; to wait longer is to encourage trouble; to remove it sooner than in twenty-four hours is taking risks not warranted in the premises.

6. Capillary is to be preferred to tubular drainage in wounds other than those of the large cavities. For this purpose absorbable material should be selected, catgut being the best.

7. Where it is desirable to combine hæmostasis and drainage in the same measure, the strips of iodoform gauze, as recommended by Mikulicz, fulfill a most useful purpose.

8. Where natural drainage can be utilized without producing unsightly cicatrices, artificial drainage should be dispensed with; when feasible, combine the two.

9. Wounds involving the brain and spinal cord had best be drained to avoid mechanical violence to the function of delicate structures by retained serum.

10. Necessity for artificial drainage will most often arise in wounds invading the large cavities; herein flexible tubular drains (glass) best meet the requirements, aided or not by materials acting by capillarity.

11. The method of secondary suture after primary wound secretion is over, advised by Kocher, seems to possess no advantage over drains that have to be removed, and certainly is not to be compared, in convenience, comfort, etc., to the patient, to absorbable capillary drains.

The Treatment of Tubercular Peritonitis.—Dr. William H. Myers, of Fort Wayne, Indiana, read a paper on this subject. He said that when we had arrived at the conclusion that peritonitis was present, and had discovered the cause, the blow must be struck simultaneously with the onset. No delay could safely be tolerated, the only hope of rescue being the sudden arrest of the disease. By the time the normal outlines of the abdomen were obscured by tympanitic distention, and respiration became quickened and shallow and the pulse rapid and wiry, the supreme moment for precise diagnosis was passed. Abdominal section for tubercular peritonitis was the most recent triumph of surgery. The reader had treated three cases of tubercular peritonitis by abdominal section, washing out the abdominal cavity, and drainage, with complete recovery.

Bacteriological Research in its Relations to the Surgery of the Genito-urinary Organs.—Dr. G. Frank Lydston, of Chicago, followed with a paper thus entitled. The author said that, in his opinion, modern bacteriological and pathological research had nowhere been more productive of scientific and practical progress than in the special field of genito-urinary surgery. He would not attempt to decide the question as to whether under certain circumstances the microbial organisms which were constantly to be found in the secretions of the genito-urinary tract were causal factors in pathogenesis of various forms; or, on the other hand, to decide the precise relation of heterogenetic organisms to the same morbid processes. The relation between what might be termed the normal germ and germs of non-pathogenic properties must certainly be left to the practical microbiologist. One was warranted, however, in drawing certain inferences and making certain practical deductions from what was known of the evolutionary laws of progression, differentiation, and adaptation to environment. Many of the diverse forms of disease of microbial origin were doubtless embraced under the omnibus term of urinary infection. The present state of our knowledge did not admit of arbitrary distinction between them. It was sufficient to say that many forms of organic and functional change affecting the genito-urinary tract were of microbial origin. These processes ranged in severity from a general infection with effusion, and perhaps suppuration, in joint cavities to so simple a local lesion as a chronic prostatic irritation.

Ovariotomy in Old Women.—Dr. JOSEPH TABER JOHNSON, of Washington, read a paper in which he reported three cases, and felt quite sure that prolonged anæsthesia and manipulation within the peritoneal cavity would have proved fatal. The first patient had been sixty-seven years of age, and the tumor removed had weighed fifty-two pounds. The second case had been one of multilocular ovarian tumor. The patient had been sixty-eight years of age, and the tumor had weighed sixty-four pounds. On October 10th of this year he had removed an ovarian tumor weighing fifty-six pounds from a lady who was sixty-seven years old, but who had looked to be a hundred. Improved methods, quicker operations, antiseptic technique, and provisions against shock showed thirty-eight recent cases, in persons between the ages of sixty-seven and eighty-two, with only two deaths, against twenty-four cases, twenty years ago, in persons between the ages of sixty and sixty-seven, with a record of six deaths. These figures demonstrated, in addition to improved technique, the surprising fact that old age was no contraindication against ovariotomy.

The Simple, Septic, Traumatic, and Specific Forms of Uterine Trachelitis and their Treatment.—Dr. BEDFORD BROWN, of Alexandria, Va., read a paper in which he said that simple trachelitis arose alone from simple causes. It never originated from infection of any kind. It could exist for an indefinite period without infecting surrounding structures. For many years the author had addressed his remedies to the interior of the cervical canal alone in the treatment of this affection, whether he used nitrate of silver, sulphate of copper, carbolic acid, or iodine. Septic trachelitis arose always from septic infection, and in itself became a center of septic infection for the pelvic structures connected by lymphatic communication. Contact of portions of putrescent placenta, membranes, coagula with the os, and septic discharges from diseased uteri were the common causes. Antiseptic measures alone could counteract septic infection and inflammation, whether in the form of septicæmic fever or local inflammatory action. All other agencies were simply palliative or adjuvant in character. Traumatic trachelitis was simply inflammation and congestion of the cervix from wounds inflicted on that body during labor or abortion or from the use of dilating instruments. The author treated this form of trachelitis by means of a solution of nitrate of silver, varying in strength from a scruple to half a drachm to the ounce, applied in the canal and over the entire cervix. He had found that most of his cases of open and all cases of concealed wounds healed by this method. Specific trachelitis might arise from either gonorrhœal or syphilitic infection. In the early stages he resorted to douches containing peroxide of hydrogen, in the proportion of one part to three parts of boiled water, and also permanganate of potassium, a grain to the ounce of water.

Shock.—Dr. JAMES EVANS, of Florence, S. C., contributed a paper in which he said that in the severe injuries inflicted on the body by accident, and in the major operations of surgery, not the least element of danger to life was the condition known as shock which rapidly supervened. The degree of shock was not determined solely by the extent and gravity of the physical injury. Certain idiosyncrasies of constitution, the character of the force which inflicted the injury, and the circumstances under which it occurred, were potent factors in its determination. Individuals of a highly wrought and exquisitely nervous organization bore pain with far less fortitude and were more susceptible to shock than those of dull and obtuse intellect and blunted sensibility. The author reported a case in point. In laying the foundation of a bridge across the Peedee River in South Carolina, an immense block of granite weighing over a ton had been lowered into a pit forty-four feet in depth, at the bottom of which had been a man who was to direct when it was in proper position. When this huge block of stone had been suspended over the pit the cable holding it had begun to slip, and the man below had been warned to crouch in a corner. as it would inevitably fall. The rock had fallen, and the man in the pit had miraculously escaped without injury, but he had been taken out in a perfectly lifeless condition, and had been exceedingly ill for more than a week.

A Manipulative Mistake and its Consequences.—This paper was read by Dr. GEORGE ROSS, of Richmond, Va. He related the case of a woman who had suffered from unremitting, agonizing tenesmus, the result of a mass which she had carried for seven years in her bladder, and which had proved on inspection to be a pledget of absorbent cotton once saturated with iodine, in shape a truncated cone, and thinly incrusted with phosphate of calcium. The patient believed that it had been introduced by her first physician, who, when attempting to apply some intra-uterine dressing, had mistaken the urethra for the cervical canal.

Harelip Operations.—Dr. WILLIAM PERRIN NICOLSON, of Atlanta, made some remarks in which he advocated the use of a simple suture instead of a pin, and also recommended paring the edges.

Cholecystotomy, with the Report of a Case.—Dr. EDWIN RICKETTS, of Cincinnati, read a paper thus entitled. The patient, a lady thirty-four years of age, married, had consulted him last June. She had never suffered severely from jaundice or from acute attacks of hepatic colic; there had been no marked distention over the region of the gall-bladder; the abdominal wall had been at least three inches in thickness; there had been some general tenderness of the liver elicited by percussion. The patient had had the characteristic putty-colored stools, and had been losing flesh rapidly. The author advocated allowing a glass drainage-tube to remain in until the common duct was opened, and then, if necessary, making an anastomosis between the gall-bladder and the duodenum.

Miscellany.

The Treatment of Ischio-rectal Abscess and Fistula in Ano.—At a meeting of the Philadelphia County Medical Society held on November 23d Dr. Henry R. Wharton opened a discussion on these subjects. On the subject of the treatment of ischio-rectal abscess he said: In this form of abscess the purulent matter occupies the loose cellular tissue of the ischio-rectal fossa in close relation to the rectum, and from the anatomical peculiarities of the tissue in which it is situated it is apt to burrow widely, and, if left to itself, to open into the rectum or through the skin into the region of the anus, and result in the production of one or other forms of fistula in ano, either the complete form or the external or internal incomplete form of this affection.

To obviate this unfortunate result the prompt treatment of ischio-rectal abscess is urgently demanded, and I am decidedly of the opinion that attempts at abortive treatment of this form of abscess are worse than useless, that by such treatment valuable time is lost, and the surgeon has finally to resort to surgical treatment after extensive burrowing of pus has occurred with possibly perforation of the wall of the rectum.

It is, and has been for a long time, a surgical axiom that an ischio-rectal abscess should be opened promptly, and if so treated the probability of a fistula in ano resulting is much diminished. I formerly was satisfied to open these abscesses by a small incision, evacuate the pus, and in many cases a prompt recovery took place without the formation of a fistula, but in others a fistula resulted; whether the rectal communication was present at the time of opening or resulted from the imperfect drainage secured by a small incision I am unable to say, but I am sure that the results I have obtained in these cases during the last few years since I have adopted Mr. Allingham's method of dealing with these abscesses have been much more satisfactory. By this method of treatment, even in cases where I have been able to demonstrate a rectal communication at the time of the operation, I have secured healing without the formation of a permanent fistula. Therefore, in any case of inflammation of the tissues of the ischio-rectal fossa, whether the evidence of abscess be clearly demonstrated or not, I follow the method which is recommended by Mr. Allingham, which consists in etherizing the patient and placing him in the lithotomy position, after having located the position of the indurated tissue or abscess; and a rectal examination by means of the finger will often assist in locating the position of the abscess. A free incision, several inches in length, is made through the tissue, outside of and parallel with the fibers of the external sphincter muscle, and the incision is gradually deepened until the pus cavity is reached. It is then slit up to the length of the skin incision and the cavity is explored with the finger, breaking down any loculi which tend to divide up the abscess cavity, and so make one cavity of the abscess. The cavity of the abscess is next washed out with a 1-to-2,000 bichloride of mercury or 1-to-60 carbolic-acid solution and is then packed with strips of iodoform gauze, and a pad of the same gauze is placed over the wound, and over this a pad of bichloride of mercury cotton is laid, and the dressing is secured in position by a T-bandage. An opium suppository is introduced into the rectum and the bowels are kept quiet for three or four days.

The dressing is not removed for two or three days, and at this time the packing is usually loose and can be removed without difficulty, and after its removal the cavity is injected with peroxide of hydrogen, and it is then irrigated with a 1-to-2,000 bichloride-of-mercury solution, and next the cavity is lightly packed with strips of iodoform gauze and the wound is covered with a pad of iodoform gauze and bichloride cotton. The same steps are observed at subsequent dressings, which are made at intervals of two or three days, and the cavity usually heals rapidly by granulation and contraction, and in a few weeks it is usually completely healed.

Mr. Allingham recommends that the cavity be packed with lint saturated with carbolized oil, and I have employed this material, but now prefer to use the iodoform gauze, as I stated above.

I will report briefly a case in which this treatment was adopted. In January of this year I saw, with Dr. Musser, a lady, forty years of age, who had suffered for a few days with inflammation of the tissues of the ischio-rectal fossa. On examination of the case, I found the left buttock, for a distance of six or eight inches from the very verge of the anus, indurated, hot, and painful; no soft spot of pointing could be detected. An examination of the rectum showed bulging of the walls of the rectum in the left side, and upon withdrawing the finger a small amount of pus escaped from the anus. The patient also stated that some matter had been discharged from the rectum during the day. The patient was etherized and a curved incision four inches in length was made just outside of the line of the sphincter muscle. This was gradually deepened until the cavity of the abscess was opened and a free discharge of pus—many ounces—escaped. On introducing my finger, I found that the cavity extended laterally for some distance and passed upward between the wall of the rectum and the sacrum. In fact, with my two fingers introduced to their full length in the wound I could not reach the upper portion of the abscess cavity. A careful examination failed to reveal the position of the opening into the rectum. The abscess cavity was thoroughly irrigated with a 1-to-2,000 bichloride-of-mercury solution and was then packed with strips of iodoform gauze, and a pad of gauze and bichloride cotton was placed over the external wound and held in place by a T-bandage. The patient did well after the operation and the cavity was dressed in the same manner every second or third day for the first two weeks, and at less frequent intervals after this time for six weeks, at which time healing was complete.

There is no question in my mind that there existed a communication between the abscess cavity and the rectum before the operation, as was shown by the discharge of pus, and by the discharge from the wound about a week after the operation of a piece of bone a little larger than a grain of corn. This bone Dr. Harrison Allen examined for me and pronounced it to be a portion of a transverse process of a sheep's vertebra. It had been swallowed with the food and had ulcerated through the wall of the rectum, and had set up inflammatory action in the perirectal cellular tissue, terminating in this extensive abscess.

The points in the treatment of ischio-rectal abscess I would especially call attention to are: Early and free incision; thorough breaking down of any secondary abscess cavities into one cavity; irrigation of the cavity with peroxide of hydrogen and a 1-to-2,000 bichloride-of-mercury solution or 1-to-60 carbolic-acid solution; packing with iodoform gauze and subsequent dressings made in the same manner, care being taken not to pack the cavity too firmly. Following this form of treatment the results of this variety of abscess in my hands have been most satisfactory.

On the subject of fistula in ano Dr. Wharton said:

Ball classifies fistula in ano as complete rectal fistula, in which there is a sinus leading from the rectum to some point in the skin in the region of the anus; and the incomplete fistula he describes as internal rectal sinus, a sinus passing from the rectum into the perirectal cellular tissue; external rectal sinus, one having an opening in the skin passing into the cellular tissue around the rectum, but not perforating the wall of the gut.

As regards the treatment of fistula in ano, the fact should not be lost sight of that it is possible to have a fistula in ano heal under simple treatment without operative interference. This is more apt to occur in recently formed fistulæ; but as the result of palliative treatment is always uncertain in these cases, and a long course of local applications is required, this method of treatment is not generally adopted. Allingham says that he has had twenty-one successful cases under this method of treatment, and a number of cases in which he was unable to effect a cure after prolonged treatment. When this form of treatment is adopted it consists in trying to obliterate the fistulous tract by rest, free drainage, and the local use of stimulating applications, such as carbolic acid, nitrate of silver, and sulphate of copper. Rest to the part is best secured by the wearing of a firm anal pad secured by a T-bandage.

At the present time the most widely adopted and successful treatment of complete fistula in ano is by incision. The patient is etherized and placed on his side or in the lithotomy position; a probe-pointed flexible director is then passed through the external opening of the fistula and conducted into the rectum; the finger is then passed through the anus until it comes in contact with the end of the director, which is bent and brought out of the anus; the tissues on the director are then divided with a scalpel or by means of scissors, care being taken to see that the division of the fibers of the sphincter muscle is made at a right angle to the course of the muscular fibers; oblique divisions of the muscle do not heal well, and are apt to be followed by a loss of power in the muscle. The main tract of the fistula being slit up, it is next explored for the presence of branching sinuses, and if these are found they are slit on a director. In indurated sinuses it is often well to make an incision through the base of the sinus, which seems in many cases to facilitate the healing. If the cutaneous edge of the fistula or sinuses tend to overlap each other near the anus they should be trimmed off with scissors. The surface of the exposed fistula or sinuses is next freshened with a curette, and, after being washed out with a 1-to-2,000 bichloride-of-mercury solution, the cavities are packed with strips of iodoform gauze, or lint saturated with carbolized oil. A compress of gauze is next applied over the wound, and over this is placed a pad of bichloride cotton, and the dressing is held in place by means of a T-bandage. The patient is given an opium suppository, and the bowels are kept quiet for three or four days.

The after-treatment of fistula in ano is most important, and many unfavorable results are due to carelessness in this particular. On removal of the primary dressing, at the end of two or three days, the sinus should be washed out with peroxide of hydrogen and a 1-to-2,000 bichloride-of-mercury solution, and a strip of iodoform gauze should be lightly passed to the bottom of the wound and allowed to rest between its edges. The mistake is often made in packing these wounds forcibly, which interferes with healing. A piece of gauze and a pad of cotton is next applied over the wound and is held in place by a T-bandage. The patient should be kept on his back two or three weeks, and the wound should be dressed in the manner described daily or on alternate days, and at the end of three or four weeks healing is usually completed.

In cases of fistula in ano of the horseshoe variety one division only of the external sphincter muscle should be made, and the branching sinuses should be laid open by curved incisions passing parallel with and outside of the line of the muscle. Sinuses extending to the perineum or buttock should be freely laid open.

The treatment of incomplete fistula of the external variety or of external rectal sinus consists in passing a director into the sinus down to the rectum, and if on passing the finger into the rectum it is found that the director is separated only from the finger by the mucous membrane, and its position is low down in the rectum, it is better to push the director into the bowel and bring it out at the anus and divide the tissues as in complete fistula, and treat the resulting wound as described after the operation for complete fistula. If, on the other hand, the rectum is merely exposed at the bottom of the sinus, it is well to lay the sinus freely open to this point, curette its surface, and pack it lightly with iodoform gauze. Subsequent dressings should be carefully made and the sinus will usually heal, though the course of treatment usually extends over a longer period of time than in cases where the sphincter muscle has been divided.

In internal incomplete fistula or internal rectal sinus, when the rectal perforation is low down, a bent director should be passed into the anus, and its point should be passed through the rectal opening and made to project on the skin near the anus. This is cut down upon and exposed and the director is pressed through it, making the fistula a complete one, and the tissues on the director are divided. The subsequent steps of the operation and dressing are similar to those mentioned in the cases previously described.

When the rectal opening is high up and it is considered inadvisable to divide the sphincter muscle or the bowel to its full extent, a director should be passed through the internal opening and the surgeon should cut down on its point from an incision through the skin a little outside of the sphincter muscle. When it has been exposed, the sinus or cavity should be curetted and irrigated and dressed with iodoform gauze, and by careful dressing the wound may be made to heal from the bottom, the rectal communication being shut off by granulation and subsequent contraction.

Among various methods of treating fistula in ano should be mentioned the elastic ligature and the treatment by excision.

The elastic ligature is principally used in those cases in which the fistula opens into the rectum at a high point, where division by the knife would be accompanied by free hæmorrhage. When employed, a cord of India rubber one sixteenth of an inch in diameter is threaded to an eyed probe which is passed through the cutaneous opening into the rectum and brought out at the anus; before tying the ligature, the skin and mucous membrane to the edge of the anus should be divided so that the ligature can bury itself when tied, thereby saving the patient pain and at the same time facilitating the more rapid division of the tissues by the ligature. After the ligature has cut its way through the tissues it is often found necessary to dress the wound in the same manner as in cases where incision has been practiced, to secure satisfactory healing.

The treatment of fistula in ano by excision has been recommended by some surgeons. The fistulous tract being dissected out, the parts are brought together by deep sutures, and if primary union is obtained there is a great saving in the time of treatment. The form of fistula in which this method of treatment is best suited is the complete fistulæ which are not very deep and have a straight course; branching fistulæ, and ones very deeply situated, I do not think are favorable cases for this procedure. If in using this method of treatment it is found that primary union has not occurred, as shown by the escape of a little pus from the line of the incision, the sutures should be removed and the edges of the wound should be separated, and it should be lightly packed and treated—in fact, as a case in which primary incision had been practiced.

As fistula in ano often occurs in patients suffering from phthisis, the question of the advisability of operating upon these cases often must be considered. The rule in these cases is to operate unless the patient's disease is in a very advanced state, when no repair could be likely to take place. In the majority of phthisical cases the result of the operation is satisfactory.

The only serious complication following the operation for fistula in ano is incontinence of fæces, and this is fortunately a rare complication. It may be guarded against by care in dividing the sphincter muscle only at one point, and by seeing that the division of the muscle is not an oblique one. When incontinence exists, it may be relieved in many cases by excision of the cicatrix in the sphincter muscle and by suturing the freshened ends of the muscle together by catgut sutures, or by applying a point of Paquelin's cautery to the cicatrix or to several points of the mucous membrane and skin of the anal margin.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

THE NEW YORK MEDICAL JOURNAL, December 24, 1892.

Original Communications.

OPERATIVE INTERFERENCE IN CASES OF CEREBRAL HÆMORRHAGE NOT DUE TO TRAUMATISM.*

By FREDERIC S. DENNIS, M. D.

At the present advanced state of the science of surgery the suggestion of a new operation meets with universal interest. The recent improvements in the technique of operative surgery has emboldened the modern surgeon to attempt operative interference in those cases in which, a short time since, no operator would dare venture. The different varieties of cerebral hæmorrhage caused by traumatism are now considered as justifiable grounds for operative interference. There are many cases of meningeal hæmorrhage, which have been reported from time to time, in which the employment of the trephine has been followed by complete recovery. There are also reported a few cases where even surface hæmorrhages have been subjected to successful operative interference. It has been the privilege of the writer to enlarge the limits of cerebral surgery by removing a blood clot from the lateral ventricle of the brain. The case was one in which there was no external violence of the soft parts or fracture of the bone to guide to the intracranial lesion. This case, I believe, is unique in the annals of surgery. All of these cases of cerebral hæmorrhage for the relief of which the trephine has recently been employed are due to traumatism. It is not, however, to a consideration of this class of cases that the writer desires to direct attention, but to another and a new class in which traumatism plays no part, and in which hitherto little or nothing has been written from a surgical point of view. Before entering upon a consideration of the subject of this paper it might be pertinent to briefly classify the different kinds of intracranial meningeal hæmorrhages, in order to clearly differentiate the special variety under discussion. As a rule—to which, of course, there are occasionally exceptions—the hæmorrhages between the dura mater and the skull are the result of traumatism. These cases are well recognized at the present time as suitable for operative interference. The cases in which the hæmorrhage occurs in the substance of the dura mater are trivial and demand no special attention as far as the employment of the trephine is concerned.

The cases, however, in which the hæmorrhage occurs beneath the dura mater, between it and the pia mater, and which are not the result of traumatism, but due to pathological changes, are those to which I would direct attention. Perhaps the brief report of a few cases belonging to this category might better serve to illustrate this special indication for the use of the trephine in non-traumatic meningeal hæmorrhages. Some of these cases were in my service at Bellevue Hospital and at St. Vincent's, while others occurred in the practice of my colleagues, through whose courtesy I am permitted to make some notes of observation:

Case I.—G. W., admitted to Bellevue Hospital April 10, 1892. Patient was in an unconscious condition. It was ascertained from his friends that he was addicted to the excessive use of alcohol. Upon examination, there were found convulsive twitchings of the muscles upon the right half of the face and also anæsthesia of the same side of the face. The following day the patient died and the autopsy revealed the presence of a blood clot on the left side of the brain over the face center. There was also a cyst the walls of which consisted of thick connective tissue and in the cavity of which was a quantity of clear, serous fluid. This cyst occupied nearly the whole of the left caudate nucleus. In this case the cyst formed the disease named by Virchow as hydrocephalus externus pachymeningiticus.

Case II.—T. G., aged thirty-three years, was admitted to the alcoholic cells at Bellevue Hospital on May 11, 1892. The patient, though in a semi-unconscious state, could be aroused without much difficulty. It was ascertained subsequently that he had been for some time a very heavy drinker. The patient, it was learned, left his place of business late in the afternoon of May 11th, and about nine o'clock in the evening he was found in the streets and was taken to the hospital by an ambulance. Upon examination, his head was found to be turned to the left side. There were convulsive movements of the muscles upon the right side of the body. There was no loss of sensation and the pupils and the reflexes were but little if any disturbed. Patient died shortly after admittance and the autopsy revealed the presence of a large blood clot beneath the dura mater upon the left side of the brain. The source of the hæmorrhage was from some ruptured vessels in the adventitious membrane, which gave rise to a pachymeningitis interna hæmorrhagica.

Case III.—W. M., aged forty years, was brought by ambulance to St. Vincent's Hospital about one o'clock on the morning of June 26, 1890. Patient was in a state of deep coma, and a few hours after admittance showed signs of asphyxia. Dr. Haubold immediately performed a tracheotomy, and it was found that a quid of tobacco had fallen from the mouth into the trachea. The dyspnœa instantly disappeared. The following day the patient died and the post-mortem examination revealed the presence of a subdural blood clot which was compressing the right hemisphere of the brain. There was no external injury of the head and the skull was not fractured. The source of hæmorrhage was from a pachymeningitis interna hæmorrhagica.

Case IV.—William M. was admitted to the hospital on December 18, 1892. Patient was unconscious and died in a few hours. The autopsy revealed the presence of a cyst filled with serum beneath the dura mater. This membrane had formed adhesions to the pia mater. There was also a blood clot under the dura over the left occipital lobe. It is to be greatly regretted that no complete history was taken of the nervous phenomena in this case, as it would be of great interest from a clinical point of view if an ophthalmological examination had been made. This, too, is a case of hæmorrhage occurring from the rupture of the blood-vessels in the connective-tissue membrane under the dura mater.

Case V.—J. O'N was taken from the street by ambulance on February 8, 1891, and brought to St. Vincent's Hospital. Patient was unconscious, and therefore no history could be obtained. He died a short time after his admittance. The autopsy showed the presence of a cyst filled with fluid situated between the dura mater and the pia mater, and also a small blood clot on the same or left side. The pressure effects in this case were due to serum more than blood, and the formation of cysts between these two meninges was the result of a pachymeningitis interna hæmorrhagica. This is another case of Virchow's hydrocephalus externus pachymeningiticus.

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* **Read before the New York Surgical Society, October 26, 1892.**

CASE VI.—M. L., aged thirty, was brought by ambulance to St. Vincent's Hospital, February, 1891. Patient was unconscious, and died during the day. The autopsy revealed the presence of a large subdural blood clot upon the right side of the brain, which covered nearly the whole right hemisphere. The source of the hæmorrhage was beneath the dura from rupture of vessels in the newly formed adventitious membrane, which had formed as the result of a pachymeningitis interna hæmorrhagica.

CASE VII.—I. V., aged sixty-five, was found on the evening of April 2, 1892. in a lodging-house in the Bowery. He was conveyed to St. Vincent's Hospital by the ambulance. Upon admittance there was found to be present hemiplegia and hemianæsthesia on the right side of the body and face. Aphasia was present, and the patient was unable to protrude the tongue. The mouth was drawn to the left side. There was no loss of consciousness, and the patient evidently understood everything that was said to him. The following day the aphasia began to clear up, but this improvement was only temporary, as subsequently his condition was followed by a return of the aphasia. On April 7th, five days after his admittance, the patient died. The autopsy revealed the presence of a blood-clot beneath the dura mater, near the site of the third frontal convolution, upon the left side. The source of the hæmorrhage was from the vessels imbedded in the membrane and situated beneath the dura mater.

CASE VIII.—J. R. was admitted on June 16, 1891, to St. Vincent's Hospital. Patient was unconscious, never regained consciousness, and two days later died. The calvarium was removed, and a subdural blood clot was found extending over the whole surface of the right hemisphere. The arteries in the circle of Willis were atheromatous, there was present pachymeningitis interna hæmorrhagica, and from this membrane the hæmorrhage had occurred.

CASE IX.—J. T., aged forty, was admitted to Bellevue Hospital, May, 1884, on account of an incarcerated hernia. After its reduction the patient desired to have an operation for the radical cure of his hernia. This was done and the patient was convalescent, with union by primary intention in the wound and with no signs of constitutional disturbance. Suddenly, while in bed, he had an apoplectoid seizure which caused hemiplegia of the right side. In a few days the patient died, and the autopsy showed a subdural hæmorrhage upon the left side over the convex surface of the brain produced by a pachymeningitis interna hæmorrhagica. The patient, it was afterward ascertained, had been a hard drinker for several years.

These nine cases, which have occurred to me, serve to forcibly illustrate the class of cases which I would respectfully ask the members of the New York Surgical Society to consider. Among them are cases in which the operation of trephining is clearly indicated, but they belong to a category in which the operation of trephining has not been practiced. The same group of symptoms occurring after traumatism would be followed by trephining; but these cases have been relegated to the alcoholic wards or to the cells, or have been overlooked as medical cases, and thus the surgeon has neglected to perform an operation which ought to offer relief to the patient from present suffering, and in all probability rescue him from certain death.

One of the most curious and mysterious coincidences in reference to this disease is its comparative frequency in the city of New York and its infrequency in the city of London. Gowers states in his recent work that the rarity of pachymeningitis interna hæmorrhagica may be judged when it is stated that for "forty years in which the Pathological Society of London has received curiosities of metropolitan necroscopy, not a single specimen has been brought before the society from any London hospital." This statement is in marked contrast to one which can be made in regard to the New York Pathological Society, since there have been presented many interesting specimens of this disease by its members, notably Dr. Northrup and Dr. Fisher. I am told by Dr. Biggs that he has notes of at least a hundred cases of this disease which he has observed at the dead house within the past few years, and an examination of the autopsy book shows that these cases are of much more frequent occurrence than is supposed. I have nine cases in my list, and, besides these, have collected eleven specimens, making a total of twenty cases to present. I have seen many others, but the data are incomplete. I find that in the pathological museums in this city there is a most interesting collection of specimens illustrating this disease. These figures point conclusively to the fact that the disease, however rare in London, is by no means rare in New York. This apparent discrepancy can be only explained by the fact that these cases have been overlooked by British pathologists, since it is evident that there is a greater number of alcoholic patients in London than in New York.

The pathology of this disease seems well understood. The special variety of pachymeningitis which concerns the surgeon is known as pachymeningitis interna hæmorrhagica. In this variety there is a new formation of connective tissue upon the inner layer of the dura mater, and at the beginning the membrane is hardly recognized, since it presents only a chocolate-colored stain upon the internal surface of the dura mater. As the disease progresses the adventitious membrane becomes thick and stratified, and in the substance of the connective tissue are found imbedded delicate capillary blood-vessels, possessing very thin walls. These vessels have been derived from those found in the dura mater. As the disease advances this adventitious membrane becomes thick and stratified, thus forming layers similar to those observed in the interior of an aneurysmal sac. The last layer is soft, gelatinous, and the newly developed and thin-walled vessels find but little support in this recent new formation. The source of hæmorrhage is from this and the subjacent layers. Some blood may come from diapedesis, but the chief source of the hæmorrhage is from a rupture of these newly formed blood-vessels, and this occurrence gives rise to abundant hæmorrhage. These clots are found oftentimes an inch or two in thickness, and by their bulk cause compression similar to a ventricular hæmorrhage. The situation of the clot is over the convex surface of the brain, as can be seen in the examination of these specimens, and, instead of pure blood, occasionally cysts are found filled with serum.

It matters little to the surgeon whether this theory of Virchow or that of other pathologists is accepted, since both acknowledge the existence of a clot. There has been great diversity of opinion as to the ætiology of pachymeningitis interna hæmorrhagica. Virchow and his followers believe the disease to be a hæmorrhagic inflammation of the dura. Virchow taught that the hyperæmia of the dura is soon followed by the formation of the membrane in which is imbedded a rich network of enlarged capillary vessels. From the rupture of these vessels occurred the hæmorrhage. The membrane forms over the convex surface of the brain, along the falx cerebri, covering an area under the parietal bones, and in the cavity of the arachnoid. That the beginning of the pachymeningitis is inflammatory is proved by the fact that the membrane adheres to the convex surface, whereas, if the clot was the origin of the membrane, the blood ought to gravitate toward the base of the brain, which, as a matter of fact, seldom takes place. The hæmorrhages occur in the membrane between the stratified layers, and, instead of hæmatomata, cysts are formed, and these cysts are filled with serum.

The *symptoms* indicating pachymeningitis interna hæmorrhagica vary according to the stage in which the disease is observed, although the anatomical lesion remains constant. For the purposes of the surgeon with a view to operative interference, the disease has progressed until there are pressure effects from the hæmorrhage.

The first symptom in these cases is the history of an *ill-defined headache.* The pain is not acute as a rule, but consists of a dull ache accompanied by a sense of pressure. The pain often suddenly increases in intensity, due often to a new escape of blood. The vertex seems to be the most common seat of the cephalalgia.

The *second symptom* is paralysis. The extent of paresis depends upon the situation and size of the clot. A study of cerebral localization will indicate the precise situation of the clot. It may involve the different cranial nerves, or it may affect certain functions of the brain, or it may involve the centers of movement for the extremities.

The amount of paresis often is influenced by the condition of the brain, since in cases of gradual atrophy of one of the hemispheres the impression of the clot does not give rise to symptoms so well pronounced as it is in a first hæmorrhage with the integrity of the cerebrum intact. Lack of co-ordination in certain muscles or convulsive movements in others often precede the paresis, and these phenomena are due to irritation which precedes the paresis. The absence of disturbance in the third, fourth, fifth, and sixth nerves points to a surface clot upon the convexity of the brain rather than a ventricular hæmorrhage.

The *third symptom* is contraction and immobility of the pupils, followed by dilatation as soon as the compressing force of the clot or cyst is pronounced. The contraction of the pupil for some time before an attack of unconsciousness is of great diagnostic value.

The *fourth symptom* is optic neuritis. This condition is present after the disease has existed for a length of time; consequently, when the hæmatoma has formed this condition invariably exists.

The *fifth symptom* is coma. This is a most valuable symptom. The loss of consciousness is usually sudden, but its rapidity is influenced by the extent of the hæmorrhage. This condition is often preceded by a state of mental apathy and somnolence.

If the coma has been preceded by headache, drowsiness, lost of mental vigor, accompanied either by a sudden or by a gradually developing hemiplegia in a patient who has been addicted to alcoholic excesses and of whom there exists no history of traumatism, the diagnosis of hæmatoma of the dura mater is certain enough to justify an exploratory trephining under the same conditions as the operation of laparotomy is performed in doubtful cases of abdominal tumor.

These form the chief diagnostic symptoms in pachymeningitis interna hæmorrhagica. It is only just to state that these symptoms are susceptible of a wide range, since they vary considerably in different stages of the disease. The previous history of the patient must never be overlooked, because, excluding traumatism and acute inflammations of the essential organs and pernicious anæmia, chronic alcoholism accounts for the presence of the disease. A history, therefore, of alcoholism with the already-mentioned symptoms is strong presumptive evidence of the source of the hæmatoma duræ matris. Trephining under these circumstances is certain to reveal the presence of a blood clot or a cyst beneath the dura mater, and offers the only hope of recovery to the patient.

The treatment of pachymeningitis interna hæmorrhagica has hitherto been considered from only a medical point of view.

Among the stereotyped measures which are recommended by medical writers may be mentioned sedatives, purgatives, cupping, blisters to the nape of the neck, diuresis, application of cold to the head, elevation of the shoulders, quiet, etc. Of what avail or value any or all of these remedies can possibly be is best left to each surgeon to judge.

In every article that has been written upon the treatment of the disease I fail to find any mention of a recourse to surgical interference, and yet it is perfectly plain that operative interference is not only indicated, but it is the only resource which can be resorted to as a means of saving life.

There is no text-book on surgery that has even hinted at this measure for relief, even though the suggestion has been made to trephine for the relief of ventricular hæmorrhage. The safety of the operation of trephining has opened the only avenue of escape to these unfortunate cases, and it is the object of this paper to direct attention to this plan of treatment which, while it does not offer a most favorable prognosis, still offers the only chance of relief.

REPORT OF SOME CASES OF
MEMBRANOUS SORE THROAT.*

By BEVERLEY ROBINSON, M. D.

There are few subjects, to the general practitioner or specialist in throat diseases, which have a greater interest than the prophylaxis and treatment of *membranous* sore throats. I use this term membranous advisedly, for are we not constantly reminded in our daily routine of practice how difficult it is to place precisely this or that form of sore throat, which presents, after all, but one absolutely general distinctive feature, and it is the presence of a false membrane on the tonsils, fauces, or pharynx?

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* Read before the American Laryngological Association at its fourteenth annual congress.

I am ready to hear some one of my hearers declaim against this statement and affirm that, according to the latest information received of an accurate kind from bacteriological research, we can now distinguish cases sufficiently to be able surely to judge a sore throat of the type referred to and put it where it properly belongs. Doubtless this is at times true, and we have little or no difficulty in making a positive diagnosis of a case. Alongside, however, are others the nature of which are undetermined, and require all our medical acumen to watch and follow them knowingly and with the consciousness that we are doing the right thing as regards patient, relatives, and friends, not to say the general public.

I have seen only lately three cases of sore throat in different households which have made me painfully alive to the foregoing impressions.

The first was that of a cook in the family of one of my near relatives. This woman was taken ill with sore throat and fever, and I was sent for. On my arrival at the house, inspection of the cook's throat revealed merely the ordinary signs of follicular amygdalitis, for which I prescribed an antiseptic gargle, moderate doses of quinine, and a cathartic pill. The following day the right tonsil was covered with an adherent white membrane, with swelling of the fauces on both sides, induration with tenderness of the submaxillary glands, marked weakness, and fever unabated. I now suspected diphtheria, and prescribed, as far as I could rationally, having consideration for the moral effect on others and for the possible mildness of the attack, such restrictions in regard to isolation and disinfection as seemed judicious. Two days later the membrane on the tonsil had disappeared and a quinsy sore throat had developed. This disease rapidly went on to suppuration, and the right tonsil soon gave exit to pus, which relieved the patient for a few hours. The left tonsil then became swollen and suppurated, but only after two or more lancings was the pus afforded a way by which it could reach the exterior. The day following the outlet of pus from the left tonsil this organ was covered with patchy membranous deposits of uncertain nature which did not appear follicular, and which made me anxious as to their possible diphtheritic nature. They were examined microscopically, and cultures were made from them which only showed the presence of streptococci and no Loeffler diphtheritic bacillus. Later and in a brief period this patient wholly recovered, and I concluded that I had to do with a form of sore throat that I have some difficulty in designating, and which, at all events, was unlike either, in its terminal stage, follicular amygdalitis, herpetic sore throat, or true diphtheria. At the same time I was attending the preceding patient I had another case of a different type, but puzzling and uncertain from more than one point of view. This case was that of a lady about middle age who, without knowledge of previous exposure to contagion, awoke in the middle of the night with a sore throat on the left side. When she went to bed in the evening she felt more lassitude and fatigue than usual; that was all in the way of appreciable symptoms. When I saw the patient in the early morning of the following day she had quite a firmly adherent patch of white membrane between the pillars of the fauces on the left side. After this membrane was brushed off I could see what were manifestly several points of follicular exudation coming out of the left tonsil. I prescribed my usual treatment of quinine, a cathartic pill, and Dobell's solution as a gargle, and said I thought the throat trouble would prove to be of innocent type. The next day my patient had some general malaise, slight fever, pain in limbs, and the false membrane had extended to the pharynx. During the following days the uvula was attacked and became coated with bits of false membrane. It was red, elongated, and infiltrated. The membrane on the tonsil and pharynx remained *in situ* for that day and during nearly a week afterward. Meanwhile the fever completely disappeared, there were few or no general symptoms, and the urine was free from albumin. The throat was quite sore, however, the submaxillary glands tender, and upon the spots where the membrane existed and was brushed off there was an eroded surface which bled slightly, and subsequently the membrane returned several times in the same locality. This case, when examined by means of the microscope, as applied to the exudate on the fauces and pharynx, presented essentially the same bacteria—viz., streptococci—that my previous case had done. Manifestly, however, the other clinical features were in several particulars distinct. What was this case? Was it diphtheria, was it a case of pseudo-diphtheria, or, in other words, a membranous sore throat? The latter was my judgment, and hence I declined myself to report the case to the health board, or to label it in a way that must of necessity carry terror to many hearts. Meanwhile I endeavored, by judicious isolation, so far as I could, and proper local medication, to rid the case of whatever danger there might be to the patient and others. A carbolic gargle was used every hour or two, and immediately after the use of the gargle the back of the throat was painted with bichloride-of-mercury solution (1 part to 500 parts). After several days, as the membrane continued obstinately to form, I employed a drachm of the tincture of iron and half an ounce of glycerin, in repeated pencilings. Quinine, in moderate doses, was given internally. The throat still showing a tendency to the return of false membranes at the pharyngeal site, I ordered two pinches of freshly powdered cubebs to be taken every half-hour, and to allow them to be swallowed slowly, so as to have an intimate contact of the drug with the fauces, tonsils, and pharynx. The latter medication, I am glad to state, terminated the cure.

A third case, which has just recovered, presented some features of interest, which also carry with them reflections, of which the practical outcome may be considerable.

A delicate child, aged two years, is taken with nasal obstruction and sneezing, but no other obvious symptoms to an anxious mother. When I saw the child, late in the evening, I would not have examined the throat in view of the apparent innocence of the attack had I not been led to do so in view of past regrettable oversights in other cases. When I did, moreover, I was not much surprised to find both tonsils covered with numerous isolated patches of membranous deposit of white color. On the post-pharyngeal wall there was also a deposit apparently similar in nature. Upon a closer investigation of other signs, I discovered that the eyelids were swollen and œdematous-looking and the submaxillary glands were much enlarged and very tender on palpation. The urine passed during the day was small in quantity and very cloudy; on standing some hours, a noticeable quantity of uric acid deposited in the phial containing it. Upon examination with heat and nitric acid, no albumin was detected. The temperature was moderately elevated, as shown by the thermometer in the rectum—viz., 102° F.; yet the surface of the skin was cool and pallid. The medication employed was iron and glycerin applications to the tonsils and pharynx, cubebs and nitrate of potassium in pinches dry on the tongue, or mixed with a little sweetened water frequently, and whisky and milk as food and stimulant. In one week's time the child was well so far as the throat was concerned. For several days during the time the deposit was present on the pharynx and tonsils there was a considerable cloudy and watery discharge from the nasal passages, and although I could at no time detect any false membrane in the nasal passages, yet I thought it prudent to spray the nose several times daily and during the night with a moderately strong solution of borax and carbolic acid. During the continuance of the sore throat the child was isolated from the other children in the house; perfect cleanliness was enjoined in regard to all things used for the child; all cloths used for wiping the child's nose or mouth were burned; suitable disinfectant agents were employed in the room during the attack; and later the room was thoroughly cleaned and ventilated. In this case no bacteriological examination was made, but it was assumed that the Loeffler bacillus was absent, in view of the fact that the disease was at no time severe and general blood-poisoning of serious import was evidently held in abeyance.

The three cases reported will serve as a basis for the remarks I shall now make and which I trust shall be sufficiently interesting to excite discussion. It is clear that old methods of differentiation between true and false diphtheria are not even as satisfactory as formerly, or rather they are even more unsatisfactory than formerly. The reason for this statement lies in the fact that the bacteriologist tells us that usually these cases can be classified solely with the aid of the microscope and by means of cultures and inoculations. The visible appearances of the false membrane and the other clinical features are frequently deceptive as regards both the diagnosis and prognosis of the disease. A membrane may be white or dirty-gray in color, perhaps, adherent to the mucous membrane beneath, leaving behind it an ulcerated surface when forcibly detached, and yet the microscope may show only different forms of cocci, and the patient may either succumb or recover, according to the intensity of the march of the disease, so far as the symptoms and sequelæ are concerned.

In other instances, like clinical evidences may be present, and the microscope and cultures may reveal the true bacillus of diphtheria. In these cases we may also have either a favorable or fatal termination. We must admit, however, that the percentage of deaths in these latter instances is much larger than those in which cocci alone are discovered. Practically, then, our minds are relieved very much when the cultures are favorable and even though the symptoms of disease are threatening. Whenever the diphtheria bacillus is discovered, and despite the fact that the march of the disease is at first apparently mild, we have a dread of what the probable outcome of it will be. Now, as regards remedial treatment, should we make any differences? I believe not, so far as I can at present determine. The same local and general agents should be employed, and in either case the throat must be properly disinfected and the system protected against the constitutional poisoning by suitable local or systemic remedies.

The only but very essential difference in such cases, so far as remedial interference is concerned, is that we work with our remedies very trustfully, or else we have a continuous anxiety as to the manner the disease will end. In regard to prophylaxis of others, I believe our duty is different according to the precise diagnosis which is made. If we have to do with a case of true diphtheria, it behooves us to say so, and to follow all the most rigid rules of isolation and disinfection, so that the disease may be prevented from extending. At times the carrying out of this protective treatment is far less troublesome and expensive than at others. Where the patient is living at home and where there are one or more vacant rooms, the problems are readily satisfied. In hotels, boarding-houses, and, worse still, among the tenement-house population of New York, we have many considerations to look to, and which necessarily increase our difficulties. We wish to save our patient expense and great annoyance. We are compelled to protect well persons by every motive of right and expediency. Whenever the cases are clearly defined by the clinical manifestations and by the bacteriological tests, we can not, we must not, hesitate as to our plain duty; but alongside are just the class of cases which I have briefly reported, and which give us many a pang in our effort to reconcile conflicting interests. About these instances I think the physician should be permitted to use his judgment and not be forcibly compelled to label them in such a way as to carry terror and great anxiety to many people with a word of evil import, but to speak, as I have stated, with good sense, and say membranous when the case is innocent or undetermined, and employ the term diphtheria solely when macroscopic and microscopic examinations unite together to fix the nature and character of the disease.

In regard to the use of *sulphur* in disinfecting rooms and apartments after a case of sore throat, and especially of the form I would continue to call *membranous sore throat*, I would emphatically say that I believe it to be a very pernicious method of dealing with them. I say this, first, because I believe it is practically useless as a means of disinfection, as seems distinctly shown by the investigations of Prudden. In the next place, I believe sulphur disinfection necessarily alarms many people. There is a certain air of mystery and preparation about its use, and the health board must, as a rule, be there in their official capacity, which adds, seemingly, to its importance, as well as to the gravity of the situation. Now, then, why not abandon this show of doing for reality? Are not cleaning, plenty of air and sunlight, if they can be had, purifying agents of far greater importance and value than the burning of a few pounds of sulphur in a room? As to the agent of the health board—the working part of the disinfecting apparatus—is his presence an innocent factor in this scene of activity? Does he not appear sometimes in doubtful cases direct from genuine and most malignant ones? Does he appear solely among cases of diphtheria or pseudo-diphtheria? Is he not moving constantly from house to house and perhaps carrying with him microbes of scarlatina, measles, and it may be of small-pox? These are queries certainly most pertinent and which have not yet been met and answered in a wholly rational and convincing manner.

A few words in regard to the cubeb treatment of membranous sore throats. There is little doubt in my mind, even at the present time, that cubeb has a very remarkable curative effect in all the various forms—not merely the innocent type which will usually get well under different treatments, but also in grave forms, which I have always believed hitherto were cases of real diphtheria. This treatment by cubeb is not at all new, as you are aware, and I myself wrote an article lauding it, which appeared many years ago in the *American Journal of the Medical Sciences.* I have always believed in it and thought I had acquired very considerable evidences of its great value. For several years, until the past winter, I had practically abandoned its use, hoping that we had found in the internal use of bichloride of mercury a medication of greater importance and efficiency. In this belief, so far as my experience goes, I have been greatly disappointed. Bichloride of mercury, in my judgment, when given for several days continuously in large doses, is objectionable by reason of its general depressing effect on the system and its possible destructive action on the blood. Moreover, I have never been able distinctly to observe any good effect of the bichloride when taken internally in a case of real diphtheria. This statement may be wholly reversed when I speak of cubeb. I know of no great objection to its use in bad cases of diphtheria, continued throughout the course of the disease in frequently repeated and quite large doses. Formerly I gave it in the form of a mixture, as I believed in its general favorable action on the system, and was of the opinion that its special value was through its being eliminated, in part at least, through the respiratory mucous membrane, and perhaps also that of a portion of the digestive tract. This belief I still entertain; but I now believe, even more than formerly, in the decided utility of its local action. For this reason my manner of giving it differs from that hitherto employed by me. I order the cubebs to be freshly ground in the form of a fine powder, and this powder is given dry on the tongue frequently, every half hour, or oftener, if possible; several pinches of the powder are taken on each occasion. Occasionally I mix a little nitrate of potassium with the cubebs, and rarely with children a small quantity of sugar to make the powder more attractive for them. I try, however, to add as little sugar as possible, because I am of opinion that it lessens the power of the local action of the cubeb on membranous sore throat. The nitrate of potassium, besides being cooling and refreshing upon the faucial and pharyngeal mucous membrane, has an unquestioned antiseptic action; whether or not the cubeb has, I am not yet prepared to state positively. I am, however, desirous of having this subject tested by the bacteriologists, and I would urge those who may read this communication and who shall have the opportunity of testing it to endeavor to determine to what degree, if any, a strong infusion or maceration of powdered cubeb shall show itself inimical to streptococci of different kinds, or indeed to the real Loeffler bacillus. Clinically, however, I am positive in regard to the excellent curative effect obtained by the use of cubebs. With small children a very simple way of administering the remedy is simply to moisten the index finger, put it in the powder once or twice, and then rub it off in the mouth of the baby. Many children suck the powder from the finger without apparently having any unpleasant sensations, and in this manner we obtain a very efficient local and general medication. Contrast this way of doing with an innocent drug with that of giving the $\frac{1}{50}$ or $\frac{1}{100}$ grain of bichloride of mercury every hour to an infant for many successive days, and I believe you will agree with me that there is no proper comparison between the two remedies.

For those who are skeptical about the value of cubebs in all forms of membranous sore throat I can only say, Try it for yourselves and see. I shall be greatly surprised and disappointed if after an extended use of the remedy you shall be prone to disagree with me as to its great power and efficacy.

A REPORT OF
SIX CASES OF EXCISION OF THE KNEE.*

By JAMES E. MOORE, M. D.,
PROFESSOR OF ORTHOPÆDIC SURGERY IN THE UNIVERSITY OF MINNESOTA, MINNEAPOLIS.

In each of the following cases the Esmarch bandage was applied during the operation, but was removed before the wound was closed, in order to control excessive hæmorrhage. I have had some unpleasant experiences from neglecting this precaution. My rule has been to make my incision above the patella, since it facilitates the cleansing out of the diseased tissues, and, the starting point being the same, it is just as good for drainage as the lower cut. Where the limb was considerably shortened, a piece was removed from the upper end of the flap. The patella was removed in every instance, because when the joint is destroyed it is useless, and it is easier to remove it than to clear it of all disease. Four steel-wire nails were used to fasten the bones together, two above and two below. Rubber drainage-tubes were used in part of the cases only. At the present time I do not use the rubber tubes, because I have found that the tissues around them almost invariably become infected with bacilli. Where a clean wound can be made, drainage is not necessary. A one-to-two-thousand bichloride solution was used very freely while the Esmarch was applied, and sterilized water after its removal. Plaster of Paris, extending from the toes to the body, was used in every case, because it has proved eminently satisfactory, and because it is more convenient than any other splint. The dressings were not changed for a month, except for special indications. I have experienced no difficulty in removing the nails at the end of the month since I have learned to leave a silk thread attached to the head of each one.

CASE I.—H. C., aged twenty-six, had been suffering from a chronic synovitis of the knee for four years. He had suffered comparatively little pain until within the last few months, when he began to suffer severely and was no longer able to work. The knee was considerably flexed, but he still bore some weight upon it when he walked. It was evident, from the long history and from the pain coming on late, that the disease had destroyed the synovial membrane and attacked the bones. Although there were no sinuses, it was evident that there soon would be, as the disease had extended well beyond the limits of the joint. A section was removed from both bones and diseased points gouged out of the tibia. Rubber drainage-tubes were introduced at the lower angles of the wound. Everything went well with my patient until the twelfth day, when he complained of very severe pain at the seat of one of the nails, and had a temperature of 102° F. Dressings changed, and the offending nail removed, after which the patient was perfectly comfortable. The wound was at this time and throughout the treatment aseptic. At the end of a month the remaining nails and the drainage-tubes were removed. The patient was allowed to get about on crutches at the end of the sixth week. At the end of ten weeks the patient went to the country, still wearing a plaster cast and with sinuses at the site of drainage-tubes. These sinuses were thoroughly curetted and packed with iodoform.

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* Read before the American Orthopædic Association, September 22, 1892.

This patient has now a good, useful leg—one that enables him to work as a house carpenter.

Case II.—At St. Mary's Hospital, Minneapolis, C. H., aged twenty-four, had suffered for four years from chronic synovitis of the knee.

The joint was greatly enlarged and was decidedly flexed. He had been unable to walk for some months. There were no sinuses, but extensive burrowing underneath the skin above and below the joint. A section was removed from both bones and the tibia gouged out. The usual dressings were applied and allowed to remain a month. Some trouble was experienced in this case in getting the sinuses extending up under the fascia lata to close. I finally laid them open throughout their whole length, curetted and packed them with iodoform gauze, after which they healed promptly. This wound was also aseptic throughout. The patient was in hospital four months. The result is perfect, and he says he can walk as far and work as hard as he ever could.

Case III.—At the Northwestern Hospital, Minneapolis, A. O., aged sixteen, had had an arthritis for two years. This knee was a typical "white swelling," with the usual deformity. It was painful and sensitive, but there were no sinuses, nor was there immediate prospect of any. It was clearly a case for orthopædic treatment, but the circumstances were such that the only way I could save the boy's leg was to excise the knee, and I thought it my duty to do so.

He was an ignorant son of a more ignorant father, and lived a long distance in the country, where treatment could not be carried out. I could not keep him long enough to do him any good in any way except by an operation. Time and again I have had cases come to me under like circumstances, and return in a year or two to have an amputation performed.

The operation was performed in the usual manner, and the usual dressings applied without drainage. In a month the dressings were removed, when the wound was found perfectly healed, there being no moisture even at the site of the nails. Six weeks after the operation he went home, and at this time it was difficult to keep him from walking upon the leg. The result is perfect

Case IV.—At the Northwestern Hospital, Mrs. B., aged forty. About two months before the operation I first saw the patient and advised excision. The knee was very painful and decidedly flexed, with subluxation of the tibia backward. She would not submit to operation at that time, but shortly afterward she had an acute exacerbation and concluded to have the operation performed as soon as she could be got into condition for it. The disease was of two years' duration. The operation was performed in the usual manner. The joint was disorganized, the femur slightly and the tibia considerably diseased. It was necessary to shorten the bones considerably and to tenotomize the hamstrings before the limb could be straightened. One cavity, about an inch deep, was scooped out of the tibia and filled with iodoform. The usual dressings were applied without drainage. During the first week the highest temperature was 101° to 102° F. After the first week it was never over 99°. The dressings were changed at the end of a month and nails removed. Patient left the hospital in seven weeks in good condition. The wounds all healed promptly in this case, but firm bony union was slower than usual, so that it was about six months before she could walk. It is now eleven months since the operation, and she has a good straight leg upon which she can walk wherever she wants to go with comfort.

Case V.—At St. Barnabas Hospital, Minneapolis, W. L., aged twenty-four years. Two months before operation I saw this patient in a neighboring city. At that time he was in bed on account of his knee. He had complained of the joint for about three years, but had been able to work most of the time. My diagnosis at that time was chronic synovitis. I advised aspiration and rest and suggested that an excision would be advisable then, as it would probably be necessary before long.

He could not come to Minneapolis at that time, but two months later was referred to me by his attending physician for excision. When he arrived at the hospital I found that the synovial sac had ruptured and that there was extensive burrowing of pus above and below the joint. I first made numerous openings at points all the way from the upper third of the thigh to the middle of the calf, and established thorough drainage. After two weeks the patient had improved so much that I concluded to excise the joint, which I did in the usual manner. Several drainage-tubes were used. The serous membrane was destroyed everywhere and the cartilages attacked, but the bones were healthy. I removed just enough from each bone to make good opposing surfaces. On the fifth day, during my absence from the city, my assistant found it necessary to dress the wound, as the patient had a temperature of 103° F. After this his highest temperature was 100°. Three weeks later I made the second dressing, and removed the nails and all the tubes but two. This case was necessarily tedious, on account of the extensive burrowing before the operation. Bony union was prompt and in perfect position. Patient was in the hospital all winter, but was able to walk upon the leg three months after the operation. He is now a healthy, active man, with a good straight leg.

Case VI.—At St. Barnabas Hospital, C. H., aged eight years, had had a typical arthritis of the knee for over three years, during all of which time he had been a great sufferer. About a year and a half before the operation the child had been brought to me, when I advised the proper orthopædic treatment; but, notwithstanding the fact that he lived in the city, he was neglected, and of course grew gradually worse, until he was brought to me the second time, when I found the joint destroyed, the tibia subluxated, and several sinuses discharging pus. In operating I found it necessary to shorten the leg considerably in order to straighten it. I also tenotomized the hamstrings tendons. Owing to the mixed infection existing at the time of the operation, suppuration followed, so that for a time it was necessary to dress the wound every few days. Bony union took place promptly, however, and the boy left the hospital in six weeks. At the present time, about four months after the operation, there is one small shallow sinus, which is healing slowly, but there is firm bony union in good position and the patient is in good health, and it is impossible to keep him from running upon the leg.

I believe that in every instance these joints could have been saved by proper treatment at the proper time. The usual diagnosis had been rheumatism, and the treatment poultices, liniments, etc. In none of them had rest been systematically employed.

I also believe that in all cases except Case III, after they came into my hands, the results from rest would not have been nearly so good as they have been from operation. While some of them might have recovered, it would have taken a long time, and the result would have been a stiff leg no better than they have now; *others would have resulted in amputation.* I have never found it necessary to excise the joint where rest had been employed early and systematically, but have been obliged to amputate in many cases where the treatment began too late, or where it had not been properly carried out.

I am not an enthusiast upon excision, and do not approve of it as a substitute for any other treatment, but I do believe that it has its proper place, and I know from personal experience that in properly selected cases it is one of the most satisfactory operations in surgery.

These are not selected cases, but are six consecutive cases, the last in my series, in which time enough has elapsed to know the result, and the principal reason that the result is so uniformly satisfactory is that I have refused to operate except in cases where this operation was specially indicated. While the result from an early excision would be good, it would be morally wrong under ordinary circumstances to operate at this stage, because by proper orthopædic treatment a movable joint could be secured. On the other hand, excision is not in my judgment a substitute for amputation. Where the ravages of disease have been so great that hopes of saving a good, useful limb have been destroyed, amputation should be performed. The operation of excision has been brought into disrepute many times, and lives have been lost when it has been performed as an experiment in place of an amputation. Time was when this was necessary, but that has gone by.

In conclusion, if I have by this brief report once more impressed upon the mind of the general practitioner the importance of early and persistent treatment of knee-joint inflammations, if I have demonstrated to the specialists here congregated the correctness of my belief that these knees *coming under treatment at a late date* should many times be excised before they go so far that an amputation is our only resource, and if I have demonstrated that excision of the knee should have a definite place in the mind of the orthopædist, I have attained my object.

125 South Fourth Street.

The Society of the Alumni of Charity Hospital.—Officers for 1893 have been elected as follows: President, Dr. Walter Lester Carr; vice-president, Dr. Richard C. Newton; secretary, Dr. Alexander Lyle; treasurer, Dr. Arthur T. Muzzy; committee on science, Dr. Carr (ex officio), Dr. Rupp, Dr. Wells; committee on new members, Dr. Bissell, Dr. Cale, Dr. Lyle; committee on entertainment, Dr. Newton (ex officio), Dr. Guitéras, Dr. Baner.

The Middleton Goldsmith Lecture.—Dr. William P. Northrup has been invited by the trustees to deliver the lecture before the New York Pathological Society in April next. The subject is not yet announced.

ON THE IMPORTANCE OF VIBRATION TO CELL LIFE.

AN EXPERIMENTAL STUDY.[*]

By S. J. MELTZER, M. D.

There is already quite a number of experimental investigations on the subject of the influence of shaking on micro-organisms. If we consult the text-books, however, we find that they either take no notice of these investigations or the report is meager and unfavorable. Indeed, superficially glancing over the results and views, one must get the impression that the numerous investigations have brought forth nothing but contradictions. Some authors state that shaking injures micro-organisms; others, on the contrary, that shaking is conducive to growth and reproduction; and there are again some writers who say that shaking does not exert any influence on the life of bacteria. A close study of our literature, however, has convinced me that, so far as facts are concerned, there are no contradictions in the results, and that, properly taken, none can be there. Nearly every investigator had another specimen for his object, and again nearly every experimenter employed another method of shaking, or at least another degree of it. Accordingly, the investigations can not be, in a proper sense, compared; the diverging results can not, therefore, be considered as contradicting one another, as each result has reference only to the influence of a special method of shaking on a special specimen. I do not intend to enter here into the details of our literature, but, in order to show the correctness of my above-stated view, I shall report briefly some of the statements representing all the diverging groups of opinions.

A. Horvath observed a thorough destruction of all the germs in a mixture of undefined bacteria by shaking it pretty violently for forty-eight hours. Reinke, Poehl, and others saw a reduction in the number, or a marked retardation in the growth of bacteria, by shaking them a shorter time, or by using less violence than in the experiments of Horvath. On the other hand, Hansen, Tumas, and Russel have found, by faultless experiments, that shaking is decidedly favorable to the growth of the organisms they experimented upon. Tumas experimented with urine, Hansen with *Saccharomyces cerevisiæ*, and Russel shook *Monitia candida*, *Saccharomyces micoderma*, and *Oidium albicans.* The degree of shaking used in all the three series of experiments was a more or less moderate one. Finally, among the authors who pretend not to have noticed any influence of the shaking upon micro-organisms, I shall mention especially Gärtner, whose bacteriological methods are certainly without reproach.

Gärtner experimented upon the "red bacillus of water, the white coccus of water, and the yellow micrococcus of the air," and his report reads that he could not observe any influence of his method of shaking upon the growth of those organisms. As nobody else has investigated the influence of shaking upon the mentioned micro-organisms, we can not maintain that Gärtner's experience is in contradiction with anybody's results. At the same time, I wish to point out that, according to Gärtner's figures, there is, against his own assertion, a distinct difference between the shaken and the unshaken yellow micrococci of the air. These organisms became in both specimens gradually less and less, but in the unshaken specimens with marked greater rapidity than in the shaken ones; and as to the method of shaking employed by Gärtner, I would certainly call it a moderate one. Thus one can be apt to consider this experiment of Gärtner's as particularly demonstrating the favorable effect of shaking for the preservation of the life of the yellow micrococci of the air.

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[*] From the Bacteriological Laboratory of the College of Physicians and Surgeons (Medical Department of Columbia College), New York.

A specimen of an entirely different character has been the object of experiments made some years ago by William H. Welch and myself; we studied the influence of shaking upon the red blood-corpuscles. The shaking was done by almost the same method as that employed in the experiments of Horvath. Nevertheless, the blood-corpuscles have not been visibly affected by simple shaking. The blood-corpuscles, however, were entirely destroyed by shaking when some finely granulated, chemically indifferent substance had been added to the blood solution. The time required for the thorough destruction of the blood-corpuscles was the shorter the greater the specific gravity, the finer the particles, and the larger the quantity of the added substance was. Neither stromata nor recognizable fragments of the destroyed blood-corpuscles could be discovered; it was, so to speak, a molecular destruction.

Of such blood where the red corpuscles were destroyed by shaking, I made the observation that it remained for a long time odorless. Suspecting the cause of this phenomenon in the possible fact that shaking destroyed also the germs of putrefaction, I started a series of experiments to study directly the influence of shaking upon well-defined bacteria, and I am going to give here a condensed account of the results I obtained from these experiments and of the conclusions I was forced to arrive at.

The method of shaking employed in the present series of experiments has been nearly the same as that employed in our studies upon the red blood-corpuscles. The fluid containing micro-organisms has been shaken, firstly, without any addition, and, secondly, with the addition of small round glass beads. The simple shaking has been at least as strong as it was in the experiments of Horvath. Partly filled and tightly closed bottles of twenty-five centimetres length have been fastened to a shaking machine,* which made one hundred and eighty excursions in a minute and was at work nine hours a day. As nutrient media were employed Koch's bouillon, with or without glucose, physiological salt solution, and, in some cases, plain water. Bottles, stoppers, nutrient liquid, etc., have, of course, always first been properly sterilized before use. Before each shaking, a droplet was taken, with a looped needle, from the infected fluid and transferred into beef-peptone-gelatin, which was poured into a Petri's plate and kept for thirty-six hours at a temperature of 72° F., and then the number of colonies was counted. After shaking, one loop droplet was taken from each of the three bottles (the unshaken control bottle, the one shaken without and the one shaken with glass beads), with which plate-cultures were prepared, and in proper time the colonies were counted; whereupon all the numbers of colonies obtained from the four cultures were compared, thus arriving at clear results.

I experimented upon a number of different micro-organisms, but on one specimen I repeated my experiment a great many times in order to establish, above reproach, the fact that micro-organisms can be profoundly affected by shaking.

The micro-organisms mostly experimented upon was the *Bacillus megaterium* (De Bary).

The results were in all experiments unequivocal and uniform. Shaking can sooner or later produce a complete destruction of the *Bacillus megaterium.* If shaken with glass beads, a perfect sterilization could be accomplished in ten to fifteen hours. A much longer time was required when shaken without the addition of glass beads; a complete destruction could not be obtained before three or four days. A detrimental effect, however, could invariably be seen even after a simple shaking of short duration, the number of colonies being always smaller than in control culture prepared before shaking.

At the microscopical examinations no recognizable fragments of micro-organisms could be discovered; all was turned into a fine dust.

The shaking of a mixture consisting of *Bacillus megaterium*, *Micrococcus radiatus* (Flügge), and *Bacillus albus* of water furnished the following highly characteristic results which I wish to report more particularly:

After shaking three days there were in the culture of N. S.* a great number of colonies of megaterium; in S. only 8 colonies of megaterium; in Glb. none. Twenty-four hours later there were in Glb. 230 well-defined colonies of *Micrococcus radiatus*, which liquefied the gelatin two days later. After shaking the mixture five days it was found to contain in the culture of N. S. = 34,754 colonies of megaterium; in S. = 0; in Glb. = 0. After twenty-four hours, S. = 387 greenish colonies of *Micrococcus radiatus* liquefied later; Glb. = 0; five days later Glb. = 14,714 whitish colonies of *Bacillus albus*, which persisted unchanged for many weeks. After shaking the mixture eight days there were in the culture of N. S. = 84,135 colonies of megaterium; S. = 0; Glb. = 0; three days later, S. = 0; Glb. = 0; three days still later, S. = 10,240; Glb. = 2,250 white colonies remaining unchanged. After shaking the mixture eleven days there were in the culture of N. S. = 180,000 colonies of megaterium; in S. and Glb. for the next five days none; but then in S. = 4,600, Glb. = 69 white colonies persisting unchanged for many weeks.

Thus the *Bacillus megaterium* proved to have less power of resistance than the *Micrococcus radiatus*, while the resistance of this micro-organism was again considerably less than that of the *Bacillus albus* of water. Shaking for three days destroyed the *Bacillus megaterium*, but not the *Micrococcus radiatus*. Shaking for five days destroyed also the germs of the micrococcus, thus allowing after seven days the 14,714 colonies of the *Bacillus albus* to appear in pure culture. Shaking for nine days also reduced the colonies of the white bacillus to 2,250, and shaking for eleven days reduced even to the small number of 69. A still longer shaking would probably have destroyed this remnant also.

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* This machine was placed at my disposal by the kindness of Mr. Carl H. Schultz in his well-known manufactory of mineral waters. I wish to express here my thanks to him.

* N. S. = not shaken; S. = simple shaking; Glb. = shaken with glass beads.

The same proportions we observed by the simple shaking, only the effect was weaker, and a longer time was necessary to obtain results similar to those accomplished by shaking with glass beads. Thus we see that different micro-organisms may have a different degree of resistance toward shaking, by which means we were even able to obtain a pure culture of the organism with the greater power of resistance.

An interesting result I obtained with a bacillus which was labeled in the laboratory as *Bacillus ruber* of water. As there are a number of different red bacilli in different waters I am unable to insist that our "*Bacillus ruber*" is identical with the red bacillus Gärtner has experimented with. The following figures are very instructive: Number of colonies in the control culture before shaking = 950; shaken eight days, cultures prepared, and after three days the colonies counted—N. S. = 259, S. = 1,366, Glb. = 16,200. Shaken twenty-one days, cultures prepared, counted after sixty hours—N. S. = 127, S. = 4,625, Glb. = 5; two days later, Glb. = 750, the others liquefied.

Accordingly the *Bacillus ruber* perishes by rest, while shaking is apparently conducive to its growth. In eight days' rest the colonies were reduced from 950 to 250, while by eight days' simple shaking there was even an increase to 1,366 colonies, though the increase is but small. A decided increase we noticed after simple shaking of twenty-one days; the colonies numbered then 4,625. But the greatest increase was obtained by shaking eight days with glass beads; the colonies reached the high number of 16,200. A prolonged shaking of twenty-one days with glass beads turned the favorable influence to a detrimental one in the proper time for the development for the colonies; there were not more than five. From 16,200 to 5! Some of these germs, however, have apparently not been destroyed, but were only in, so to say, an "asphyxiated" state from which they managed to recover after a few days' rest and favorable nutrition. Thus the *Bacillus ruber* could also be destroyed after very long and strong shaking, but a lesser degree of it has proved to be very favorable, and some degree of shaking is apparently even indispensable for the growth of the bacillus. The effect of shaking upon the *Bacillus ruber* we may compare, in a certain sense, with the effect of the temperature on micro-organisms. In the effect of the last-mentioned factor we distinguish different degrees—minimum, optimum, and maximum; or, in other words, a certain degree of temperature is for the growth of micro-organisms or cells in general indispensable; at a certain higher degree the thriving is at its best, and then a still higher degree follows, which is destructive to the life of all living matter. We should not forget to mention that by a certain influence of heat the cells are only in a lethargic state—*rigor caloris*—from which they can yet turn into life. Similar divisions we have to establish in the effects which are produced upon the *Bacillus ruber* by the different degrees of shaking. At rest the number of colonies were gradually reduced; eight days' simple shaking was about the indispensable minimum; eight days' shaking with glass beads, increasing the number of colonies to 16,200, may be considered as the optimum; twenty-one days' shaking with glass beads reduced the number of colonies to 5, and may be taken as the maximum effect. But for some colonies this degree and period of shaking had only an asphyxiating effect, which may be compared with the *rigor caloris*.

I wish to remark that simple shaking with the hand affected favorably even the growth of *Bacillus megaterium*. The addition of glass beads, however, was sufficient, even for this short period, to turn the effect into a detrimental one.

Of my experiments with other bacilli I shall not speak here, as they did not offer any new points. There are only two more experiments I wish to mention: First, my attempt to determine the increase of temperature, which has been produced by my methods of shaking. It could not exceed 5° F. Thus we may be sure that the different kinds of influence the shaking has produced were due to the mechanical effect of shaking and not to the increase of temperature, which was too small for this purpose. Secondly, I have subjected the *Bacillus megaterium* and *Bacillus subtilis* for many weeks to the vibrations prevailing in a machine house of one of our large breweries. The bacilli became gradually less until they disappeared entirely, while the control showed a steady increase.

My experiments have thus furnished the following results: That all micro-organisms I experimented with could be completely destroyed by more or less strong and prolonged shaking; that different organisms have proved to possess a different power of resistance toward the effect of shaking; that the destruction can also be accomplished by vibration; and, finally, my experiments on certain organisms have furnished the fact that shaking can have a favorable as well as a destructive effect upon one and the same organism, depending alone upon the degree of shaking to which the organism was subjected.

In connection with my own results, I wish to remind here once more of some of the points pertaining to our subject which were furnished by previous investigators. Horvath attained a perfect sterilization of infected fluid by violent shaking; Reinke observed a distinct retardation of the development of germs by subjecting them for some time to the acoustic vibrations. On the other hand, Hansen, Tumas, and Russel state that a more or less moderate shaking is conducive to certain micro-organisms.

Putting all points together, I arrive at the following briefly stated view: It is wrong to generalize, as Horvath did, that "motion is detrimental to life"; it is, on the other hand, also wrong to assert unconditionally that motion is beneficial to the growth and reproduction of organisms.

The truth seems to me to be rather this: Vibration has for living matter the value of a physical force, like some of the other physical forces—heat, for instance. Here nobody asks whether temperature is favorable or unfavorable to the functions of life. We ask what degree of temperature forms the optimum, what degree is indispensable, and again what is detrimental to life. We know further that each of the three degrees has to be established separately for every organism, for each organism has its own heat scale. Thus we know that some bacteria are thriving at the freezing point (Foster, Fischer), others grow best at air and others at body temperature, and some bacteria again feel very comfortable at a temperature of 150° to 160° F. (Globig).

Likewise with vibration, we have to ascertain for each species separately which degree is indispensable (minimum), which degree forms the optimum, and which degree of vibration is destructive to the life of the organism. We saw in our experiments how a simple shaking for eight days was decidedly destructive to the *Bacillus megaterium*, while it was hardly more than a favorable minimum to the *Bacillus ruber*.

Shaking is in the last effect nothing but vibration. Vibration, we may assume further, produces a fine motion of the minutest particles in the bodies of the minute organisms. In other words, vibration produces a molecular motion in the bodies of the micro-organisms. This assumption is the more admissible as we know that shaking produces heat, and that heat is nothing but molecular motion. But as we have established the fact that the mechanical effect of shaking is not identical with the production of heat, it follows that the fine motion of minute particles, brought about by vibration, must differ from the molecular motion produced by heat. Therefore I suggest that the minute particles to which the vibration is transmitted are not the physical units, the chemical molecules, but they are the physiological units, which I should like to term with Foster *somacules;* these elementary particles may be identical either with Naegeli's well-known "*micells*" or with Wisner's "*plasams*." I accept the view of Nägeli that each of these elementary particles is surrounded by a layer of fluid, which is the carrier of the metabolic products.

Thus I think that the vibration of the elementary particles influences favorably the metabolic process. Violent shaking, on the other hand, causes a looseness between the elementary particles, or a complete disunion.

Perhaps the dust which I constantly found in place of the destroyed bacteria represents our somacules. The difference in the resistance against the effect of shaking may have its source in the different degree of closeness between the elementary particles, which probably varies in different organisms.

Concerning the particulars of my experiments and the discussion of them and of my theory, I must refer to a more extensive article which will appear in the near future in a physiological journal. There will be found also a discussion of the question, how much vibration is practically involved in that what we term rest; and, further, how much there is of mechanical effect in the long-confirmed influences of heat and light upon living matter.

The object of my experimental investigations has been the ascertaining of a biological truth, without any consideration whether the results will have any direct bearing on the science or practice of medicine. And though, with the far-reaching view I entertain of the importance of vibration to life, there might be a well-founded expectation that many functions and states of normal and pathological life could be brought in close relations to the effects of vibration, I withstand this temptation for the present. Hasty practical utilizations of newly recognized scientific facts prove nearly always to be a failure. The history of medical science is full of such discouraging instances. Remember tuberculinum Kochii! But I can not restrain myself from referring to the prominence which was quite recently given to the effect of vibration in the most practical department of medicine—in therapeutics—and by no less a man than Charcot!

In a remarkable article, entitled La médecine vibratoire, Charcot communicated last August his very favorable therapeutic results, which he obtained by treating different nervous troubles—like paralysis agitans, neuralgia, neurasthenia, etc.—with rapid and continued vibrations. The vibrations produce a soothing effect. It seems that this communication has awakened wide attention. According to Charcot, the first attempt to treat nervous affections by vibrations was made by Vigouroux in 1878, and was followed by Baudet, Mortimer Granville, and others. It was in the year 1878 that Horvath published his experiments on the influence of motion upon life; and, as a year before Horvath made a preliminary communication of his subject in the Société de biologie, where it aroused a good deal of attention, we could be apt to think that just this communication has been the *primum mobile* for Vigouroux's attempt to utilize vibrations as a new therapeutic agent. It seems to me, however, that it would be more proper not to consider the "médecine vibratoire" as a new and separate mode of treatment, but rather to classify it as a part of mechanotherapeutics. And there we find that the well-known Dr. Zander attempted, long before Vigouroux, to treat nervous troubles like neuralgia by vibrations.

On the subject of the position of vibrations within mechano-therapeutics, I would refer to an interesting article of Buchheim's, which appeared some time before Charcot's communication. The interest of Charcot himself in the effects of vibration was awakened, according to his statement, by the common observation that the pains accompanying paralysis agitans were favorably influenced by prolonged driving in a carriage with much shaking. It is historically interesting to note that one of the primary causes for Horvath's experiment was the similar observation that a prolonged transportation of eggs rendered them sterile. The same observation caused Dareste to study the influence of shaking of hatching eggs upon the production of malformations.

All these facts remind us of some pathological states, like railway spine, commotio cerebri, shock, etc.—all of which could be considered as resulting from a violent shaking up of nerve cells, without any visible anatomical lesions. Accordingly, we would have on the one hand the favorable soothing influences of moderate vibrations, and on the other hand the detrimental influence of violent shaking upon nerve cells, a contrast which then well corresponds with the results of my experiments on micro-organisms. Again, our experience with the asphyxiated micro-organisms—*rigor vibrationis* (?)—may lead us to believe that many of the violently shaken up nerve cells are not destroyed, but only "shocked," and that the remedy for their recovery would be, as in my experiments, rest and good nutrition. I shall, however, for the reason stated above, restrain myself for the present from following out this subject any further.

At the conclusion I wish to express my gratitude to Professor T. M. Prudden for the opportunity afforded to me to carry on my experiments in the laboratory of which he is the director, and for the cordial interest shown in the progress of my work.

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SOME OBSERVATIONS UPON

THE DETECTION OF MINUTE QUANTITIES OF ALBUMIN IN THE URINE

AND UPON THE EXISTENCE OF THE SO-CALLED

PHYSIOLOGICAL ALBUMINURIA.

(*Quelques observations sur la reconnaissance de petites quantités d'albumine dans l'urine; et sur l'existence de la soi-disante albuminurie physiologique.*)*

By HENRY B. MILLARD, M. D.,

FOREIGN CORRESPONDING MEMBER OF THE ACADEMY.

Translated by THE AUTHOR.

In the memoir which I had the honor of reading before the Academy at its session of September 6th I referred incidentally to those cases of albuminuria in which the urine contained only three centigrammes of albumin per litre. Dr. Germain Sée, in discussing my paper, expressed the opinion that it was impossible to detect albumin in such minute proportions. I was surprised at this expression of opinion, inasmuch as it is a fact recognized by physicians and chemists who have studied in the laboratory the chemical features of the urine, that even so small a quantity as three milligrammes of albumin to the litre can be detected. In a paper read by me before the Academy of Medicine of New York in 1887, upon the most sensitive and accurate tests for albumin, I showed that nitric acid, which is not the most sensitive test, would detect 1 part of albumin in 100,000—that is, 1 centigramme to the litre. Roberts (*Diseases of the Kidneys*) maintains that heat will detect 1 part in 250,000 = 0·0043 per litre. I have found, however, that it does not show less than 1 part to 100,000.

Tanret's test easily shows 1 part in 200,000, or about 0·004 = gr. $\frac{1}{16}$, while my own test of phenic and acetic acid and potash will detect 1 part in 300,000 = 0·003 or gr. $\frac{1}{20}$ per litre. As to the accuracy of these tests there is no doubt. Lecorché and Talamon, in their work on *Bright's Disease and Albuminuria*, published in 1888, a work to which was awarded the prize of this Academy, gave a great deal of consideration to the tests for *albumina minima*, both as to the nature and as to the value of the most important tests. They experienced no difficulty in showing that albumin can be detected in the proportions I have named. I need hardly say, however, that the examination for *albumina minima* must be made with a great deal of care.

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* Read before the Academy of Medicine of Paris, September 13 1892.

A word in regard to what is known as "physiological" or "normal" albuminuria. Dr. Germain Sée, as it seemed to me, assumed that this had been perfectly demonstrated. But by whom, how, and when? Senator (*Traité de l'albuminurie**) says that albumin could always be detected in the urine were there sufficiently sensitive tests. In reply to this, Lecorché and Talamon (*loc. cit.*) said:

> As to the sensibility of reagents, we have seen that with Tanret's and Millard's test albumin can be detected in solutions of 1 part to 200,000 or 300,000—that is, 5 to 3 milligrammes to the litre. Urine, supposing that it contains albumin, which gives no reaction with these tests, must then contain less than 8 milligrammes to the litre. If, then, the renal filtration is such that it will not allow 5 milligrammes ($\frac{1}{13}$ grain) to pass in twenty-four hours we may admit that it will not allow the slightest trace to filter through.

The fact is that there are numerous substances mistaken for renal albumin. The dissolved epithelia from the uterus, vagina, and bladder, the *liquor puris*, leucocytes, pus, dissolved or partially disintegrated pus corpuscles, and the urine of persons with even a mild catarrh of the bladder, will give with delicate tests the reaction of albumin. Severe exercise—as, for example, a long walk or horseback ride, excessive physical exertion—may cause sufficient congestion of the genito-urinary tract to produce a little mucus in the bladder which might be mistaken for albumin; and the presence in the urine of certain protein substances often found in it may lead to the same error. I will close by an extract from my own work relative to this point:

> It is extremely difficult sometimes to differentiate mucin from serum albumin. I have made a large number of experiments which show that any liquid containing secretions from irritated or inflamed mucous surfaces will give a distinct reaction with nitric, picric acid, Tanret's and my own test (both these latter containing acetic acid), and especially with citric acid, which is the most sensitive test for mucin. Secretions from the bronchial, pharyngeal, or nasal mucous membrane, not purulent, but as they may occur in any ordinary cold, macerated for twenty-four hours in distilled water, heated, not to the boiling-point, and filtered, will give a reaction with all the above tests. This I have verified repeatedly, and, so far as I know, I have been the first one to observe this. I have mixed these, after filtering, with *non-albuminous urine*, with the same results. And this is not surprising, inasmuch as mucus usually contains in solution organic nitrogenous substances (as well as salts), mucosine, and cells of the mucous membrane from which the mucus is derived. It is in some respects really *albuminous*. And it is this element, I believe, which in many cases constitutes the so-called "physiological albuminuria." It is not sufficient for writers to state that they find albumin, temporary or transient, under certain circumstances. Such statements should not carry weight unless the observer states his methods, precautions, tests, etc., in examining the urine. Cases even have fallen under my observation where people have been treated for nephritis because their urine constantly gave a reaction of albumin with certain tests.

If renal albuminuria were normal it would be more frequent. I have examined with every possible precaution a very large number of specimens of urine under varied conditions, in which the microscope showed no cystitis, nor any epithelia, nor pus corpuscles, without finding the slightest trace of albumin. Unless the microscope is resorted to in determining whether the slightest affection of the mucous membrane exists, the observer is not justified in stating that the albuminuria is of renal origin.

PHLEBOTOMY IN URÆMIA.

By RENWICK R. ROSS, M.D.,

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Through the kindness of Dr. Andrew H. Smith I am allowed to report the following case:

Mrs. G., married, aged forty-two years, laundress. There is no morbid family history; she has had malaria and rheumatism, and there is present both a nephritic and moderate alcoholic history. She first noticed symptoms of her present trouble in May, 1890. She then had attacks of dizziness, swelling of her feet, ankles, and legs, and some dyspnœa. She kept at her work with these symptoms varying in degree at different times till October 24, 1892, when, on account of her increasing trouble, she was compelled to give up work. She was admitted to the hospital October 31st. Previous to the time of admission the urine was almost suppressed.

Physical Examination.—Patient very stout and plethoric. There is a condition of general anasarca; tongue coated with a heavy brown fur; patient breathes with much difficulty. Over both lungs, anteriorly and posteriorly, are heard numerous sibilant and sonorous râles. Heart sounds are feeble and distant and pulse is of very high tension. Liver and spleen negative and extremities very œdematous. On the second day after admission, after diuretics had been freely given, there was secreted an unusually large amount of urine. The urine, however, soon became much diminished, and contained albumin, granular and hyaline casts.

On the morning of November 4th the patient had her first uræmic convulsion. These continued throughout the day and night with increasing severity, and at one time artificial respiration was necessary. Pulse continued of high tension notwithstanding the administration of one one-hundredth of a grain of nitroglycerin hypodermically every forty-five minutes. During the entire night the patient was very restless. Between the uræmic convulsions she was tossing about in wild delirium. Toward morning she developed a condition of alternating coma and delirium, and pulmonary œdema developed. The tension of the pulse remaining very high and all the symptoms becoming more grave, it was decided to do venesection. The median basilic vein was opened and twenty ounces of blood much darker than ordinary venous blood was withdrawn.

The effect was instantaneous. The patient lapsed from restlessness into a calm sleep. This continued for three hours, and, on waking, the patient was perfectly conscious and the pulmonary œdema had disappeared. The normal flow of urine soon became established, and in two days the anasarca had entirely gone.

Although the pendulum of public opinion has swung to the extremes and phlebotomy is out of date with the profession, the writer believes that it accomplishes a valuable purpose in the therapeutics of cases of uræmia which are of the plethoric type. In such cases as the one above recorded, where there is a pulse of high tension, it gives almost immediate relief. It diminishes the pressure on the kidneys and allows their normal functions to become established. The overstrain on the heart and the high-tension pulse are relieved for a time and the general condition is much improved.

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* French edition, 1891.

CHLOASMA UTERINUM.

By A. A. YOUNG, M. D.,
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"They are 'liver spots.' Yes, doctor, I know they are liver spots, for my liver is bad, and I have been taking medicine for my liver for a long time, but the patches don't seem to get better; I do not see what is the matter. Yes, doctor, I have liver complaint, I know I have." Such is the plea, and question the diagnosis if you dare.

Such, in general, is the clinical history given by those female patients of about middle life who appear more than occasionally for consultation, and have upon their faces and body large yellowish-brown or blackish patches situated in and just underneath the epidermis.

Chloasma is simply, so far as its ocular appearance is concerned, an abnormal deposit of pigment in the skin without interfering with the character or function of it.

The term chloasma in its general sense indicates only a condition without even suggesting a probable exciting cause for the pigmentation. It may be due to direct mechanical irritation of long standing; it may be due to some organic disease, as consumption, scrofula, etc.; it may be due to nervous irritability or dependent upon some change or irritation in the uterine organs.

Concerning this last named condition, which might be termed uterine chloasma, I desire to say a word, because it is the most common form and most amenable to treatment. It is rare that we see this disease begin and develop before puberty or after the menopause. Its existence is dependent upon the abnormal activity of the generative organs. From observation I am led to believe that excessive venery is one of the more common sources of irritation that produce the deposit of pigment. In all those cases in which I have been permitted to make a vaginal and uterine examination there was a flabby and enlarged uterus, the cavity of which, including the cervix, measured from three and a half to five inches. The uterine walls also were more or less thickened, and both the os externum and internum somewhat dilated; in short, the uterus assumes the condition and appearance of subinvolution as is occasionally seen following confinement. But this condition exists not alone in females who have been pregnant, but in females as well where conception has never taken place.

Uterine chloasma runs an indefinite course; it may exist even to old age or gradually fade away, as it often does in proportion as the generative organs lose their irritability beginning with the menopause. Since the patches may exist a long time even after uterine irritation has subsided, we are led to infer that the nervous system furnishes in part that condition on which the deposit of pigment depends, else there would be no return of it after its removal.

The diagnosis in a general way is not difficult; the most perplexing portion is to differentiate the various causes that may produce such a condition and discover the active one. As before stated, uterine enlargement has been found in every case where a full examination has been permitted; the inference is therefore drawn, right or wrong, that in every case of uterine chloasma there is, in a greater or less degree, an enlargement of the uterus, but the enlargement and irritability of it may depend upon some neurosis.

Our treatment, therefore, must be twofold: First, to remove the discoloration of the skin, and, second, to restore the parts on which the discoloration depends to their normal condition. It would be almost useless to attempt to remove the discoloration without first removing its cause; both may be treated together, however, advantageously. For the former condition the most satisfaction has been derived from the use of bichloride of mercury (not gold), five grains to the ounce of water, carefully painted over the affected skin. In a few days a bran-like desquamation will appear and with it more or less of the deposit of pigment. After exfoliation of the superficial layers of the epidermis, if pigment still exists, the process may be repeated and continued as long as pigmentation remains.

For the latter condition medicines administered by the mouth are of doubtful utility; personally I have been unable to observe any benefit arising from the administration of any drug by way of the mouth or subcutaneously. The only treatment that has been of avail consisted of direct applications to the uterus, stimulating it to activity and causing in it powerful contractions; for this electricity may be used, especially galvanism, which causes tonic muscular contractions. But what has served my purpose better is the insertion into the uterus of a soluble intra-uterine pencil which by its presence causes powerful contractive pains resembling labor pains, and thus causes a reduction in size of the organ in a mechanical way. A repetition of this process will in due time restore the organ to its natural condition. This pencil can be most easily inserted by use of a "pencil carrier," procurable of any good instrument maker. One may be improvised, if need be, from an ordinary catheter. Any pencil may be used containing any drug that suits the fancy of the prescriber; preferably I prescribe a pencil containing iodoform on account of its antiseptic properties. But uterine contraction in such cases is produced by local irritation, hence it matters but little what the composition of the pencil may be, unless other conditions exist in and about the uterus which must be taken into account. I believe—a belief founded upon past experience—that a judicious treatment along the lines indicated will serve to eliminate that unsightly condition known as uterine chloasma.

A Method of Treatment of Cysts of the Auricle.—Laoraud (*Rev de laryngologie et d'otologie*, June 15, 1892) is of opinion that there are certain cysts of the auricle which have nothing in common with othæmatoma. When these cysts show no tendency to heal spontaneously, puncture of the cyst with the galvano-cautery and slight cauterization of the internal wall of the cyst soon cause adhesion of its wall and collapse of the cyst without either deformity or scar.

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THE QUESTION OF A NATIONAL QUARANTINE.

It is unfortunate that the recently published report of a committee of the New York Chamber of Commerce dealt with two entirely different questions—that of the quarantine system in general and that of the capacity or incapacity of certain officials who were and are still charged with the enforcement of the quarantine laws of this State. The defects of the State system and the necessity of action to put the Federal Government in charge of quarantine at this port and at others are matters properly within the scope of the report, and they are immensely important. The question of the precise amount of blame or praise due to any officials on account of their conduct a few months ago is of little moment, save perhaps to the officials themselves and a few others. There is, moreover, some danger that the criticisms upon individuals may seriously weaken the force of the whole document; the uncalled-for criticism of the present health officer seems to us calculated to have such an effect. One of the characteristics of the American people is the widespread idea that it is a good thing to stand by any one who is the subject of adverse criticism, especially if he happens to be a public office-holder. It is to be hoped that public attention will be confined in this instance to the matters of real gravity dealt with in the report, especially as a member of the committee is reported to have said that it was "not the intention of the committee to pass judgment upon individuals, but to present a principle."

It is maintained that the events of September and October clearly showed the quarantine methods of the State of New York to be very objectionable. We think that the same events have made it plain that the State ought not to be expected to deal single-handed with such emergencies. It is impossible for the health officer to comply with the law which requires him "immediately" to remove the passengers from an infected ship, unless they are few in number. It is impracticable for any State to have at its command the necessary corps of trained men to superintend the disinfection of vessels and cargoes, or indeed to care for the detained passengers, both sick and well. It is not possible for any State to establish an efficient school for instruction in quarantine duties, and without special instruction no one can be expected to perform such duties in a satisfactory way. It can not be assumed, moreover, that the State of New York will ever provide itself with the necessary plant for quarantine purposes. To do so would require too great an expenditure of money, for provision would have to be made sufficient to shelter and care for perhaps from five to seven thousand people. The whole system of State quarantine is one of the survivals from the days when an exaggerated importance was attached to the sovereignty of States. Not only is it out of date to-day; it is a source of national peril. Epidemic diseases do not respect boundary lines. Cholera entering by whatever route will not be limited in its ravages to the particular State which admits it; it will spread far and wide. It is a menace to the whole nation, and it is the nation's duty to protect itself.

There is no doubt that the National Government has the right to assume control of quarantine. Indeed, there is something almost grotesque about the idea that New York or any other State, which has no recognized relations with foreign powers, can justly be compelled by reason of the failure of the Federal Government to assume the responsibility to take upon itself the functions that properly belong to the United States; since quarantine necessarily implies more or less interference with foreign ships and subjects, and may therefore lead to international complications. Whatever opposition to Federal control may arise must come from people influenced by selfish motives. It is the duty of the profession to use its influence to bring about the reform. At the same time it is well to remember that the advocates of a reform often do its cause much harm by attempting to have injudicious legislative enactments passed which they think will accomplish the wished-for results. In the present case there is no reason for establishing, as some have proposed, a national board of health, and still less a new department to be called the Department of Public Health under the charge of a secretary. The Treasury Department has already the frame upon which to build a quarantine corps of trained men in the Marine-Hospital Service. It would need but an increased force and more money to enable it to assume the additional duties, if empowered to do so. There is no need of complicating the machinery of the Government by new boards or departments.

THE EARLY SYMPTOMS OF POTT'S DISEASE AND OF HIP DISEASE.

At a meeting of the Section in Pædiatrics of the New York Academy of Medicine, held on December 8th, Dr. Lewis A. Sayre described some of the early symptoms of Pott's disease. He said that one of the most characteristic symptoms was the peculiar expression of the face. It was a look of dread difficult to describe, and was sometimes seen before the appearance of any knuckle in the spine. The same apprehension was shown in the gait. The tread was careful and tender, the patient walking upon the ball of the foot, without putting the heel firmly to the ground. The hips and knees were slightly flexed to avoid concussion, the body being held rigid. The child anxiously avoided jarring of the body, and the whole trunk was often held rigid as if the spine were ankylosed. In picking objects from the floor, instead of bending forward naturally the child would go to the side of the object and reach it by bending the hips, knees, and ankles, using the hand to aid in rising and keeping the spine in the same erect posture. He was inclined to support himself by resting his elbows on the table or chair. If no object for support was near he would frequently bend forward, putting the hands upon the knees to support the trunk. Pains were common, varying according to the region affected. There might be earache, pain on deglutition, or a wheezy, croupy cough, and peculiar jerky respiration. If the lower part of the spine was affected, pain in the stomach would suggest disorders of the alimentary canal. If it was the lumbar region, the action of the bladder would be disturbed and there would be pains and cramps of the legs. Sometimes irritation of the spine caused contraction of the muscles of the trunk, as if a cord were tied around the body. This girdle appearance was usually a very early symptom of the disease; it would generally disappear when the child was slightly suspended by the head and arms. Owing to contraction of the psoas muscle, if the child was laid upon the face and the thorax elevated by raising the heels, the lumbar spine, instead of becoming concave as in the healthy child, would remain rigid or even become slightly convex.

Dr. Royal Whitman said that the physician should be familiar with the attitudes of the healthy child and be able to note deviations from the normal standard. The attitude of Pott's disease differed according to the region affected. In disease of the cervical region there was stiffness of the neck or lateral deviation of the head; in that of the lower cervical and upper dorsal regions there were elevation of the chin and shortening of the neck; in that of the middle dorsal region there was elevation of the shoulder or lateral inclination of the body; in that of the lumbar region there was abnormal erectness with lordosis or limp. In rheumatic wryneck, a condition sometimes mistaken for Pott's disease, the acute history and the superficial and general tenderness of the affected muscles determined the diagnosis. The reflex muscular spasm of Pott's disease was easily overcome. If the child was placed on its back on a table and the head allowed to project over the edge, supported by the hand, and gentle traction was made, the spasm often relaxed and it would be seen that there was no infiltration or local pain in the contracted part. In inflammatory torticollis the spasm was persistent and increased with traction. In Pott's disease of the upper and middle spine weakness was often a distinctive symptom, but was to be distinguished from the weakness of idiocy or exhausting disease by the presence of neuralgic pain, spasm, and rigidity. The deformity of empyema had been mistaken for Pott's disease, an error that proper physical examination would make impossible. In the lower dorsal region the posterior curve of rickets was sometimes mistaken for Pott's disease. In rickets other signs were present; the curves were rounded and were readily removed by placing the child on the face and gently massaging the back. Psoas contraction sometimes caused a limp simulating hip disease. In this condition the spine would be rigid and the movements of the hip restricted in one direction only. As a rule, proper attention to the history, to the attitude, and to the flexibility of the spine would make the diagnosis simple.

At the same meeting Dr. A. M. Phelps read a paper on The Early Symptoms of Hip Disease. One of the earliest and most distinctive signs of disease in any joint, he said, was limitation of motion due to rigidity of the muscles. This produced deformity, the second symptom. Limitation and deformity produced limp, the third symptom. These three symptoms were almost invariably present in the early stages of hip-joint disease. There were in joint diseases eight cardinal symptoms, two or more of which were always present. These were pain, heat, swelling, tenderness, limited mobility, spasm of muscles, atrophy, and deformity. In addition to these symptoms, each joint was subject to special symptoms, due to its anatomical characteristics. In hip-joint disease pain was not always present. Rise of temperature, owing to the depth of the joint, was hardly perceptible; swelling was not seen until late; tenderness was present only in intracapsular disease; atrophy was common. Other symptoms were night cries, pain in the knee, flattening of the buttock, and obliteration of the gluteal fold. The important symptoms of hip-joint disease in most cases occurred in the following order: 1. Impairment of mobility. 2. Deformity with apparent lengthening or real shortening. 3. Limp. 4. Atrophy (in bone disease). 5. Pain in the knee (with absence of knee-joint disease). 6. Pain on joint pressure. 7. Night cries in the absence of other joint disease. 8. Flattening of the buttock with change in the gluteal fold. 9. Apparent lengthening. 10. Real shortening. 11. Heat. 12. Swelling.

Dr. Leroy M. Yale read a paper on The Diagnosis of Hip-joint Disease from Rheumatism, Neuralgia, and so-called "Growing-pains." The symptom, he said, that first attracted the parents' attention was usually lameness, but the diagnosis would rest more upon muscular atrophy, and still more upon limitation of mobility within the joint. Of the various restrictions, that of the movement of rotation was of the greatest diagnostic importance. Hip disease pursued a halting and fluctuating course, the following symptoms being those of greatest importance: Lameness, pain and tenderness, loss or limitation of mobility, muscular atrophy, and faulty position. The most frequent error consisted in mistaking coxalgia for rheumatism. Migration of the arthritis was strong evidence in favor of rheumatism, as was also the rapidity of its onset. The pain of hip disease was usually more marked at or near the knee, while the tenderness was at or near the hip. In rheumatism the pain and tenderness were not thus separated. In rheumatism tenderness was elicited with little difficulty; in hip disease only by certain movements and upon concussion. In hip disease atrophy occurred early; in rheumatism late if at all. In rheumatism restriction of mobility depended upon suffering or dread of it; in hip disease it was often unconscious. The whole body sometimes followed the motion of the thigh as if the hip joint were obliterated. In rheumatism fever was likely to be present; in hip disease fever was rare. Chorea, endocarditis, and nodules belonged properly to rheumatism, but might coexist with hip disease.

Neuralgias sometimes closely simulated hip disease. Neuralgia and coxalgia might coexist, the one overshadowed by the other. The diagnosis could only be made by taking the typical symptoms of hip disease as a standard of comparison. Pain was generally severer in neuralgia than in hip disease. It was apt to be out of proportion to the other symptoms. Tenderness was more superficial, the skin often being hyperæsthetic. Limping was exaggerated in neuralgia. Swelling might occur in joint neurosis, but it did not usually occupy the site in front of the joint as it did in coxalgia. The limit of mobility and muscular atrophy in hip disease were likely to be absent in neuralgia during the early stages. In hysterical joints rigidity often existed, but the fixed position assumed was not always characteristic of hip involvement. The term "growing-pains" was applied to several conditions, the commonest being ill-defined rheumatism affecting the muscles and their fibrous attachment. If a cardiac lesion was present the diagnosis was made clear. If the symptoms followed exposure or overexertion, the pain being more distinct near the ends of the long bones, arthritis was to be looked for. Such a case might, however, be one of osteitis or periostitis. The main point to be remembered was that "growing-pains" should never be considered trivial, but as an expression of rheumatism, neuralgia, or real bone disease.

MINOR PARAGRAPHS.

THE SOUTHERN MEDICAL COLLEGE ASSOCIATION.

Delegates from fifteen medical schools met on November 16th at Louisville, and formed an association of the schools with this title. The annual meetings will be held at the time and place of those of the Southern Surgical and Gynæcological Association, unless otherwise expressly ordered. The new association is committed to an extension of the requirements for graduation from two to three sessions of six months each, to be attended in different years, and a certain amount of evidence must be submitted by the proposing matriculate that he or she has been graduated from a higher grade school or that an equivalent in scholarship has been attained. We think there are about thirty-five colleges or universities that have degree-granting powers among the States south of the Mason-Dixon line, so that the line of battle between the two-year and the three-year grades of schools in the South must presently be drawn. The new regulations with regard to the consenting colleges will take effect in the autumn of 1893. The following officers were elected for the current year: Dr. J. M. Bodine, president; Dr. W. D. Haggard, vice-president; and Dr. G. C. Savage, treasurer and secretary.

VACCINATION IN INDIA.

The use of bovine lymph in India continues to grow in popularity. In sixteen districts out of thirty-one, says the *Medical Press and Circular*, primary vaccination is entirely performed with animal lymph. In eight other districts the great majority of vaccinations are done with that lymph. There yet remains a considerable prejudice against this form of lymph, mainly among the Hindoo inhabitants of the Hill States. Again, in some parts of the country every form of vaccination finds opposition. In this connection, the official reports give an interesting case. Two influential Mahajans permitted their daughters to be vaccinated, but their sons were secluded so that the latter eluded the same protection. As time went by, small-pox came among these families, and the daughters escaped, while the sons were taken with the disease and died. This bitter experience has not been lost upon those Mahajans, for since that time they have sought for and obtained the vaccination of all the unprotected members of their households. In the Northwestern and Oudh provinces the reports show an increase in vaccinations, comparing the last two official years, from about 990,000 to 1,050,000, or fully 60,000 increase.

THE MEDICAL PROFESSION AT MONTE CARLO.

The medical men practicing in the principality of Monaco, together with their wives and families, have been denied entrance to the gambling halls of Monte Carlo for the alleged reason that "they are tradespeople who go there to make a living in the same sense that undertakers, publicans, and other sinners go there to gather in some shekels rather than to scatter them"—these classes one and all having been excluded by the managers from the sacred precincts of the green baize. This action toward the medical men and their families may be an oblique kind of compliment, but just the same it should be a source of congratulation, since the administration virtually says that it does not wish to win the well-earned and slender medical fee away from the practitioner. Furthermore, it does not desire to be compelled to pay back his *viatic*—or funds advanced to any one who is *décavé* in order to get him out of the country—at the end of the season. The doctors and their families are not forbidden access to the concert room and the *Salle des pas perdus*, but they must shun the major temptations of the place.

THE USE OF BOILED WATER BY THE ANCIENTS.

Whatever theories the ancients may have held as to the corrective action of heat and other agents on noisome substances, it is certain that they made use of them with such corrective action in view. An illustration of this statement is to be found in a paragraph quoted by the *Deutsche Medizinal-Zeitung* from the *Allgemeine Wiener medicinische Zeitung* in which allusion is made to the statement by Herodotus that in one of Cyrus's campaigns his table was supplied with water from the Choaspus, boiled and transported in silver vessels borne on four-wheeled mule-wagons. This was more than 550 years before the Christian era.

PUERPERAL FEVER IN DENMARK.

According to the *British Medical Journal* for October 1st' the recently published statistics of the Danish Board of Health show a marked decline of puerperal fever in that country during the pre-antiseptic period, 1860–'69, when the death-rate (per mille of births) was 9·66; during the experimental period, 1870–'79, when the death-rate was 5·41; and during the antiseptic period, 1880–'89, when the rate was 3·33. Antiseptics are at present in general use among Danish midwives.

THE ANNUAL REPORT OF THE SURGEON-GENERAL OF THE ARMY.

The report for the year ending June 30, 1892, although not a bulky brochure, contains much interesting statistical and other matter. Particularly interesting are a number of cuts appended to the report, showing the 1892 pattern of the army ambulance wagon and various appliances of the emergency outfit and of the private hospital corps.

ITEMS, ETC.

The Hospital Saturday and Sunday Association of New York City calls attention to the approaching annual hospital collection (for 1892) in the churches, synagogues, trades, and professions. The association now embraces thirty-four hospitals, covering every branch of medical and surgical science, and the general collection is divided among them on the basis of free work performed during the preceding year, on behalf of the suffering poor. The aim of the association is to interest the whole people in hospital work. All beliefs and shades of opinion are represented, and Christian, Jew, and Agnostic labor side by side to the common end of helping afflicted humanity.

The Hospital Sunday collection is taken in the churches on the last Sunday of the year, and the Hospital Saturday collection in the synagogues on the preceding Saturday. Collections in the trades and professions, and upon the exchanges, are made through the medium of auxiliary associations and committees or by means of subscription lists sent to separate establishments. These lists number about 4,000. The hope is that in all cases employers and employees will make this a common cause; and, in return for the collection in the trades and professions, the association, through its hospitals, takes care during sickness of any contributing employee or any one requiring free hospital treatment who is recommended by a contributing employer until the entire amount contributed by any trade is exhausted at the rate of $1 a day for each patient.

Last year the contributions amounted to $60,263.91. During the past year the associated hospitals cared for over 20,000 bed patients, of whom fully 15,000 were free patients, besides operating upon or giving medical aid to more than 200,000 free dispensary patients. According to the reports from the hospitals, the total expenses for this work during the year were $1,150,185. To cover this outlay there was an income from invested funds of $260,500, an income from paying patients of $270,500, and an income from the city of $31,150, leaving the large sum of $588,035 to be raised from the benevolent public; and one of the means to this end is the Hospital Saturday and Sunday collection. The Hospital Saturday and Sunday collection has undoubtedly been a means of giving great impetus to the free hospital service of the city, which since the inception of this movement (now fourteen years ago) has practically doubled; and yet the service is far below what it ought to be to meet the city's needs, especially in caring for consumptives and incurable cases generally.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending December 20, 1892:

DISEASES.	Week ending Dec. 13.		Week ending Dec. 20.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	3	2	1	2
Typhoid fever	13	4	19	5
Scarlet fever	88	15	140	11
Cerebro-spinal meningitis	3	0	0	1
Measles	110	14	104	13
Diphtheria	94	42	125	33
Small-pox	0	1	1	0

A Reception in Honor of Dr. Matthew D. Mann, of Buffalo, was given on Tuesday evening, the 20th inst., by Dr. Paul F. Mundé.

Society Meetings for the Coming Week:

Monday, *December 26th:* Medical Society of the County of New York; Boston Society for Medical Improvement; Lawrence, Mass., Medical Club (private); Cambridge, Mass., Society for Medical Improvement; Baltimore Medical Association.

Tuesday, *December 27th:* New York Dermatological Society; Buffalo Obstetrical Society; Medical Society of the County of Lewis (quarterly), N. Y.; Boston Society of Medical Sciences (private).

Wednesday, *December 28th:* New York Surgical Society; New York Pathological Society; New York Academy of Medicine (Section in Laryngology and Rhinology); Metropolitan Medical Society (private); Auburn, N. Y., City Medical Association; Medical Society of the County of Albany; Berkshire, Mass., District Medical Society (Pittsfield); Philadelphia County Medical Society.

Letters to the Editor.

OPHTHALMOMETRY IN AMERICA.

December 1, 1892.

To the Editor of the New York Medical Journal:

Sir: In the *New York Medical Journal* for November 19th, under the heading of Ophthalmometry in America, you have published the introductory historical remarks of a lecture on Corneal Astigmatism, presented at a meeting of the Philadelphia County Medical Society, on October 26th, by Dr. G. E. de Schweinitz, of Philadelphia. In these remarks Dr. Swan M. Burnett, of Washington, is characterized as the "champion of ophthalmometry in America." It is with all that candor and fairmindedness due one professional brother from another that I am obliged to dissent from the claim made by Dr. de Schweinitz, and to ask you to allow me to give my reasons for so doing.

While undoubtedly to Dr. Burnett belongs the honor of having *first* used the ophthalmometer (old model, he never having used the new model so far as my knowledge goes; at least, he has given no description of it), and also of having *first* written upon the subject of ophthalmometry in America, he has by no means and in no sense been its *champion*, nor did he popularize the instrument as it now is. The honor of the championship of ophthalmometry belongs to another man—to D. B. St. John Roosa. As everybody knows, a champion for anything is one who contends for it, not one who simply describes it. The latter is what Dr. Burnett did for the ophthalmometer. It was faint praise he gave it. Never did he claim that its use surpassed other methods of measuring astigmatism, especially the astigmatism of the eye as a whole. Dr. de Schweinitz's words themselves constitute Dr. Roosa the champion when he describes what he has written in behalf of the ophthalmometer as "an earnest advocacy of its employment—an advocacy that has never ceased, and has never been couched in words of an uncertain tone."

The instrument—the old model—when first shown by Javal and Schiötz in 1881, in London, and later when used in America, seems to have been regarded by those who saw it, and even by those who used it, as a scientific toy. Certainly but little more value was given it than to the disc of Placido or the squares of De Wecker. In fact, Burnett, in his first paper on ophthalmometry, gave drawings made from measurements of the cornea by the disc of Placido. In some respects he claimed it to be superior to the ophthalmometer. Two years later, in his *Treatise on Astigmatism*, when describing the ophthalmometer, in one paragraph he declares "the value of this keratometer in the diagnosis of astigmatism can hardly be overestimated," while in the preceding paragraph he says: "As it is not possible with this instrument to examine with any degree of accuracy the lenticular surfaces, and as these form important elements in the general optical condition of the eye, the apparatus is of limited advantage in obtaining the refraction of the eye as a whole, except in cases of aphakia. Its usefulness for estimating general ametropia is still further diminished by the fact, which the instrument itself has done so much to establish, that the conditions of myopia and hypermetropia are not due, except in rare instances, to variations in the refracting surfaces of the eye, but to changes in the antero-posterior diameter of the eyeball."

This paragraph certainly shows lack of faith in the instrument except in cases of aphakia, and in this respect Burnett's opinion coincides with that of Landolt, who does not use the ophthalmometer at all, I believe, and has just as little faith in it, except in cases of aphakia, as Burnett, as is shown by a quotation from him (Landolt) made by Dr. F. B. Eaton, of Portland, Oregon, in a recent article,* as follows: "These instruments may render service when the dioptric system of the eye is reduced to the cornea alone, in aphakia. But in an immense majority of cases the determination of the curvature of the cornea is far from sufficient to acquaint us with the amount of astigmatism." Then Dr. Eaton goes on to say himself: "Later clinical experience of many observers proves that the above statement is incorrect, for, on the contrary, it is known now that in the great majority of cases all but one half of one diopter of the astigmatism is caused by unequal corneal curvature."

If this is so, as it certainly is, then it is unfortunate for Burnett, as a champion, that, in regard to "obtaining the refraction of the eye as a whole" with this instrument, his opinion and his words are nearly identical with those of Landolt, who is anything but its champion. Compare quotations from each. Burnett: "The apparatus is of limited advantage in obtaining the refraction of the eye as a whole, except in cases of aphakia." Landolt: "These instruments may render service when the dioptric system of the eye is reduced to the cornea alone, in aphakia."

The honor of having championed and popularized the ophthalmometer in America belongs to Dr. Roosa. It was introduced to the profession by those to whom we shall always be ready to give honor. But, as they themselves did not believe in the value of the instrument except in a very limited way—much below what Javal and Schiötz claimed for it—it is no wonder that the introduction was forgotten and the instrument generally consigned to the limbo of obscurity. It was scarcely noticed by oculists in general. It was taken for granted from the method of its introduction that it was not at all an essential instrument, as is now claimed.

Dr. Roosa took a discredited instrument and brought it into wide use and good repute. No one, I think, will, or can for that matter, claim that the old instrument was in any sense a popular one in America, it being only in the offices, so far as I can learn, of not more than six oculists—certainly not more than twelve—and in some of these offices it was put aside in the lumber room. That the new modeled instrument could have been popularized from a description of the old is out of the question. I doubt very much if the new instrument could be used at all from the description of the old, and I am sure it could not be accurately employed.

It was Roosa who took the perfected instrument, and by his unceasing advocacy of it, both in writing and in teaching, demonstrated its great practicability, not only in cases of aphakia, *but in all cases of refraction.*

A. E. Davis, M. D.

THE USES OF WATER IN MEDICINE.

51 West Seventieth Street, New York, *December 3, 1892.*

To the Editor of the New York Medical Journal:

Sir: In the review of *The Uses of Water in Modern Medicine*, contained in your valuable issue of November 26th, an error occurs, whose correction may interest your readers and will certainly fulfill your well-known desire for fairness.

The reviewer expresses the belief that the "author has evidently overlooked the popular treatise of Gully on Water, in making the statement that the translation of Winternitz is the only work in the English language that has not the taint of quackery." Since I made this the *raison d'être* of my book on water, desiring to offer the English-speaking profession a complete account of the remedial properties of water, based upon a rational clinical basis, I beg your permission to substantiate the statement.

The fact is that the work of Dr. Gully is but an enlargement of a smaller book "by Drs. Wilson and Gully, practitioners of the Water-Cure Establishment at Malvern, England, published by S. R. Wells & Co., 737 Broadway, New York, 1875." This is attested by Dr. Gully's own statement at the head of Chapter II, page 327, that portions of this chapter are reprints from the smaller book by Wilson and himself, and by the reproduction entire of the thirty-five propositions on water cure on page 402, taken from pages 80 to 83 of the smaller book.

That Dr. Wilson and Dr. Gully were quacks of the deepest dye is attested by the fact that the latter part of their little book consists of testimonials that excel "McCoy & Wildman's" or Dr. Greene's only in length. The first one of these purports to be from Admiral Francis Beamun, who says: "Gentlemen, as I am firmly convinced that I owe my present state of health and even my existence to your instrumentality," etc. The other "testimonials" being of similar purport, they certainly put a very pronounced "taint of quackery" upon the authors of the book. The proposition, therefore, stands unassailable that *The Uses of Water in Modern Medicine* is the only English book, except the translation of Winternitz, that is free from the taint of quackery. As the latter has driven the profession from the more general adoption of the most orthodox of remedies (see Hippocrates *De aëre, aquis et locis*), I take it that a comprehensive and unbiased statement of the therapeutic value of water, from a modern clinical standpoint, may reclaim it and place into the hands of the physician a weapon of unappreciated power against disease.

Simon Baruch, M. D.

⁂ In the review of Dr. Baruch's meritorious work reference was made to a work on the water cure by Dr. Gully, that went through quite a number of editions. The first appeared in 1846, the fifth in 1856, and we can see no relation between it and a work that we did not mention, by Wilson and Gully, published in 1875. In the work by Dr. Gully to which we refer there are no statements on page 327 or page 402 like those mentioned by Dr. Baruch, and there are in the volume no such testimonials as Dr. Baruch refers to.

Dr. Gully was a prolific writer, and it hardly seems probable that one whose various works were spoken of in such terms as the following could have been a quack: "One of the most interesting volumes which we have ever perused" (*Medico-chirurgical Review*); the volume "exhibits a just view of the disorder, and deserves the perusal of every medical practitioner" (*Edinburgh Medical and Surgical Journal*); "We recommend the perusal of this work to all those who have an inordinate faith in the efficacy of medicine" (*Medical Times*); and "the present volume . . . is highly important in its relation to the management of health" (*Lancet*).

AN ELECTRICAL NOVELTY.

91 Storm Avenue, Jersey City, *December 3, 1892.*

To the Editor of the New York Medical Journal:

Sir: I notice in your issue of November 12th a somewhat labored letter from Mr. R. C. Rutherford, as a reply to my article An Electrical Novelty, published in the issue for July 9th. Mr. Rutherford has quoted me at great length, with oceans of Italics, the quotations, as he says, "so signalized in order to attract the reader's especial attention to both the form and substance of the language."

That means, we are to suppose, that the "form of the language" was not the usual well-known repeating echo, or

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* *Medical Record*, November 12, 1892, p. 577.

"cuckoo," to some authority; and the language moreover seems to have had the barefaced audacity of possessing some "substance." If Mr. Rutherford, by his letter, has fully established his reputation as not at all likely to sin in the latter direction, it is not for me to complain.

My critic's quotation from Flint's *Physiology*, to show that nerve papillæ are more numerous on the palms of a man's hands than on the soles of his feet, is quite irrelevant. Of what man? *Civilized* man, who, from his cradle, has had his feet inulated and therefore damaged in the usual civilized way, whiles his hands have been left comparatively free, or in Nature's state. Supposing custom had ruled, instead, that our hands had been for ages incased in thick leather as our feet have been, and that our feet had been left free. Does any sane man doubt that in such case Flint's *Physiology* had shown quite different results? It is therefore something like adding insult to injury to make any such unfair comparison with the feet.

In my aforesaid article I mentioned the fact that Nature had placed a great nervous concentration in the soles of our feet, where the nerves, if free to do so, would have actual contact—*i. e.*, electrical, or electro-nerve contact—with the earth. Mr. Rutherford replies that "Nature has taken especial pains to prevent them from being 'free to do so.'" "She interposes," he says, "a hard, horny substance between them and the earth whenever the feet are exposed to continued contact with it, augmenting the thickness according to the exposure. And besides," he continues, "this horny substance (the thickened epidermis) is one of the most non-conductive of all animal tissues." Now that is an important point. If this horny covering is such a substance as will really resist the passage of that electricity of low tension which, I maintain, ought to pass freely from a man's body through his feet to the earth as he walks, then my theory must be wrong. But is it such a substance? Let us consult Flint's *Physiology*—Mr. Rutherford's own authority. Treating of the *entire* skin, Dr. Flint says (page 134): "On examining the surface of the skin with a low magnifying power, especially on the palms of the hands and the soles of the feet, the orifices of the sudoriferous (sweat) ducts may be seen in the shallow groove between the two rows of papillæ. . . . If a thin section of the skin be carefully made and examined microscopically, the ducts are seen *passing through the different layers*, and terminating in rounded convoluted coils in the subcutaneous structure." Again (page 138): "There are no examples of the separation by glandular organs of *vapor* from the blood; the perspiration is secreted as a liquid"; and, as a liquid, Dr. Flint goes on to say, it is discharged upon the surface. Now, who is so ignorant as not to know that at *all times* there is a discharge of moisture from the body through these sweat ducts, and that such discharge increases with exercise? The "horny substance," then, is completely riddled by sweat ducts, which in myriads occupy every tiny groove in the papillæ of the skin, continually having a flow through them of liquid perspiration. Is it possible such a substance as this can be a non-conductor of electricity—natural or static electricity—which is necessarily of low intensity? What says Michael Faraday (no mean authority) to this? In his *Researches in Electricity*, vol. i, par. 1017, he says: ". . . for water can conduct electricity *of such low intensity* by the same kind of power which it possesses in common with metals and charcoal, though *it can not conduct electricity of higher intensity* without suffering decomposition, and then opposing a new force consequent thereon."

I commend the perusal of that extract, with much more of Faraday's work (which possibly men do not take sufficient time nowadays to read), to all those professedly practical electricians who so persistently and vehemently protest against any idea of conduction other than that of so many volts of current electricity from a dynamo. Such people maintain that the thick sole of a shoe is *not* a non-conductor to *any* form of electricity That must simply be because they do not understand such "electricity of low intensity" as Faraday here speaks of.

In this connection, also, Sylvanus P. Thompson says (*Electricity and Magnetism*, p. 29): "For example, dry wood is a good enough conductor to conduct away *the high potential electricity* obtained from friction, but it is a bad conductor for the relatively *low potential electricity* of small voltaic batteries." Who can be found so misguided as to say those words do not apply as truly to the tanned leather of our shoe-soles and the low potential electricity of our bodies as they do to dry wood and low potential voltaic electricity?

Some people, however, still imagine we have no such thing as natural electricity. Thompson, on this point, says (page 188): "The contraction of the muscles [man's] also produces currents." Again: "A sudden contraction of the muscles of either arm produced a current from the contracted toward the uncontracted muscles. Dewar has shown that when light falls on the retina of the eye an electrical current is set up in the optic nerve."

Once more, as to moisture and conductivity, the same authority (S. P. Thompson, page 29) says: "A little later Du Fay succeeded in sending electricity to no less a distance than 1,256 feet through *a moistened thread*, thus proving the conducting power of moisture." A clean, *dry* silk thread is, as almost any child knows, pretty near perfection as a non-conductor; *moisten* it, and it conducts perfectly, like Thompson's thread above mentioned; and so with Mr. Rutherford's non-conductors—wool, hair, etc.

Surely no one would be so foolish as to deny the pre-eminent position occupied by *water*—often only in the shape of moisture—in the animal system. In no sense can it be held of greater importance in the body than as a means or aid to the physiological movements of electricity. It seems extraordinary, even among the multitudes of electrical vagaries of our times, that any one of ordinary intelligence should be found advancing the self-contradictory proposition that the soles of a man's feet, particularly the soles of an habitually barefooted man, are non-conductive to electricity. Mr. Rutherford should try his hand at *charging* a barefooted man with electricity from an electric machine, and making said man retain the charge while he walks, say, three paces on the ground! If Mr. Rutherford's "hard, horny substance, or thickened epidermis," is really "one of the most non-conductive of all animal tissues," he ought to be able to perform such a miracle. It would be a conclusive experiment and highly interesting, surely, as well as edifying, to the whole scientific world! No; our natural soles *do not* obstruct the passage of natural electricity, nor of any artificial current of electricity, until its intensity becomes so high as to decompose water (Faraday); therefore the soles of our shoes ought to have a like conductivity, if our bodies are to be kept in health.

But *proof* is better than miles of argument. Many physicians, both in New York city and pretty well all over the States, *have already tried it*, both on themselves and on their patients. They may be seen and consulted as to the beneficial effects, in quite a variety of complaints, of electro-nerve earth connection in our shoes. That is the best test—the *proof* of the matter.

George Quarrie.

CHOLERA AND IMPORTED RAGS.

New York, *December 19, 1892.*

To the Editor of the New York Medical Journal:

Sir: A contributor to your journal insinuates that the pooporsition of Dr. John Woodworth, referred to by me in a recent communication, is not proved and never will be. To those who have not consulted the original report, I would suggest that they investigate the Tent-Havre, Antonson, and Russian cases which Dr. Woodworth cites in proof of his proposition, and which at least enabled him to form a satisfactory opinion.

I do not think it will be out of place for me to direct the attention of the profession to a timely instance which will show the danger of importing rags. During the past week a consignment of over one thousand bales of rags was brought to this port from Bremen and the rags are now at Hoboken. These were passed by the health officer of the port, upon consular and other certificates, and it was alleged that they had been exposed to fumigation with sulphur. I have seen two specimens, which were selected at random. One of them has been shown to Dr. J. D. Bryant, of the Health Department, and the other to the editor of this journal, and I possess affidavits as to their authenticity. They are known to the trade as "hospital rags," and the two specimens spoken of were saturated with blood or covered with inspissated pus, fæcal matter, and various other offensive substances. Some were matted together with dried coagula, and others were rolled up, showing that no systematic exposure had been made even to such an unsatisfactory agent as sulphurous-acid gas. What the result might have been had not the attention of the health officer of the port been directed to their arrival, I am unable to say, but I am quite sure that, had they been scattered throughout the country, there would be no difficulty in finding apologists for this procedure.

Allan McLane Hamilton, M. D.

Proceedings of Societies.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

Fourteenth Annual Congress, held at Boston on Monday, Tuesday, and Wednesday, June 20, 21, and 22, 1892.

The President, Dr. S. W. Langmaid, of Boston, in the Chair.

(*Continued from page 668.*)

Some Cases of Membranous Sore Throat.—Dr. Beverley Robinson, of New York, read a paper with this title. (See page 703.)

Dr. Morris J. Asch, of New York: I do not know of any better way to assist Dr. Robinson as he desires than by relating one's own experience. The same difficulty which he has met with I have myself encountered. During the past winter I have seen cases in which it was extremely difficult to make the diagnosis between diphtheria and membranous sore throat. Like the author, I know of no way to make an absolute diagnosis except where there are striking clinical features or by microscopical examination. As to the use of the microscope, you will all agree with me that it is not practicable for the practitioner in every case coming under his observation. The cases of membranous sore throat to which I refer had at first the appearance of a light attack of diphtheria. Take, for example, the case of a man about forty years of age, of great business responsibilities, whose brother was a general practitioner in New York, and feared that the patient was going to have an attack of diphtheria. I found a membranous appearance on the surface of the tonsils, not thick and white as it usually is in diphtheria, yet presenting a suspicious appearance. I did not wish to alarm the family, yet I believed it was right that certain precautions should be taken. Therefore, without going to the extremes of quarantine, I simply requested that the family be kept away from him as far as possible. He was not sick enough to be in bed. As is my usual custom in such cases and in diphtheria, I made a local application of tincture of chloride of iron, gave quinine after the old fashion, and then, in deference to the new method, sprayed the throat two or three times a day with 1-to-500 bichloride solution, directed a more frequent spraying or gargling with a solution of chlorate of potassium, and ordered whisky several times a day. The membranous patch began to disappear from one side, and I believed that he was getting well, when the patch appeared upon the other side. That was treated, when it appeared on the pharynx, looking more like the ugly, shiny membrane of diphtheria, and thus it continued to reform in new places as fast as it was attacked at a prior one by the treatment just mentioned. Finally getting tired of this, I applied a solution of nitrate of silver, forty grains to the ounce of water, after which there was no further reproduction of membrane and in a few days the patient was well. No other member of the family became affected, although there were several children. He was not strong after the attack, and required stimulants for three or four weeks. That was one of a series of cases which I saw during the winter, and it was impossible to say at their outset whether they were cases of diphtheria or of membranous sore throat. I treated them as if they were cases of membranous sore throat and not as pure diphtheria, and all terminated favorably.

In another family one of the children had sore throat with the formation of a membrane. As two or three boys at the same school had a similar sore throat, I suggested that he be put into a room by himself, as I feared diphtheria. The mother asked if I was sure that he had diphtheria, and I had to reply that I was not. She said she would take the responsibility of not quarantining him, and she proved to be right. It is frequently wise to take the opinion of a mother about her child's condition when one is in doubt.

I thoroughly agree with Dr. Robinson with regard to labeling a house in which diphtheria is present. We think it necessary to do certain things because they are modern and scientific, but I believe that, with all the suggestions made with regard to antisepsis, new remedies, bacteriology, etc., we are in danger of going too far. We should do well to halt, look back, and see if we have not dropped some things that are really useful and taken up some that are superfluous.

As to cubeb, I have found it very useful in diseases of the throat. I hope to employ it as suggested by Dr. Robinson, and will report at the next meeting.

Dr. D. Bryson Delavan, of New York: I coincide with much that is contained in the paper. The suggestions made are valuable. Regarding bichloride of mercury, I was taught the use of this agent in diphtheria about 1878; I have used many other remedies, but have found nothing which seemed to answer so well as bichloride, and have obtained better results from it than from anything else. While, therefore, I am happy to hear of what may prove more useful, theoretically as well as practically the bichloride appears to take the lead, and I should be in no haste to discard it until a better method of treatment had been proved to exist.

Dr. J. Wright, of Brooklyn: A few years ago at the hospital with which I am connected we were interested, as was also the profession, in cases called croupous rhinitis. In some cases the nose was full of membrane, so that casts, more or less complete, could be drawn out which resembled the cast of true diphtheria. Until recently those were called cases of benign croupous inflammation of the nose, but last winter Baginsky reported several such cases in which he had found the Loeffler bacillus, yet the patients had had no constitutional symptoms whatever and had recovered. The importance of this observation has been enhanced by its more recent confirmation by Concetti, an Italian physician. If that is true, it throws the whole question of diagnosis from the bacteriological and microscopic aspect into doubt, which is a serious matter, for we have to treat diphtheria and not the Loeffler bacillus. In any case of croupous inflammation of a mucous membrane we are, according to this information, unable to say, although the Loeffler bacillus may be present, what may be the prognosis, whether bad or favorable, and it justifies us in managing mild cases just as we would severe ones, so far as sanitary precautions are concerned.

Regarding the inutility of sulphur fumigation, I quite agree with the author. It has no effect on any micro-organism as used by the boards of health.

I have had no experience with cubeb, but it seems to me we need not expect to accomplish much in the way of disinfection by blowing a little of the powdered cubeb over the tonsils or by painting them with bichloride of mercury. While dead bacilli are numerous on the surface of the false membrane, the majority of the live ones—those which do the harm—are buried in the membrane where the germicide will not reach them. If these agents do any good it is through the circulation; but I doubt whether the clinical evidence of their utility will stand critical analysis. At least, I can not conceive in what way they would have any effect except upon a few loose bacilli. Still, I use bichloride because I can do no better. These remarks apply equally to swabbing. I do not think the letter which Dr. Robinson has read helps him out of the difficulty, for it does not appear reasonable that enough of the cubeb can be absorbed to have the effect mentioned, and, as just stated, it can have no local influence upon the deeply situated bacilli.

Dr. John O. Roe, of Rochester, inquired of Dr. Robinson whether he distinguished between membranous sore throat and diphtheria, holding that one affection was constitutional and the other local.

Dr. Robinson: I am at present in a doubtful frame of mind. I have regarded diphtheria as a constitutional disease, and have hitherto believed that membranous croup was a local manifestation of diphtheria or of a constitutional disease. In the doubtful position which I occupy, I simply provisionally use the term membranous sore throat to cover as well as may be a condition which I can not precisely define. That is to say, all cases in which I may be in doubt I would call membranous sore throat so as not to use a term of bad odor. When I am sure of what it is, I say it is either diphtheria or it is not; if it is amygdalitis, I say so. But, as just stated, if I do not know what it is, I think it best to speak of it as membranous sore throat.

Dr. Roe: It is an undisputed fact that all infectious diseases are caused by germs. The poison, however, does not consist in the presence of the germ itself, but in the ptomaines which it generates, a fact proved by Wood and Formad several years ago. They showed that all diphtheritic membranes remained equally poisonous after they had been absolutely freed from germs. In cases of diphtheria, as already stated, it is the Loeffler bacillus that is recognized as the germ which produces the disease and is found present in all diphtheritic exudates.

Before inoculation of the system with this bacillus can take place, however, we must have a constitutional derangement that furnishes in the body a good feeding ground for the bacilli. While a person is in good health inoculation is well-nigh impossible. Now, therefore, before we can have a membranous exudate, there must be a constitutional disturbance; and I believe that all membranous exudates of an infectious character are of constitutional origin.

It is not infrequently the case that an infection is of so mild a character and the exudate so slight that the affection is believed to be nothing more than an ordinary sore throat and no importance is attached to the case, whereas other members of the same family may shortly afterward be attacked with diphtheria of malignant form. The infection in the two instances had doubtless been the same, but the difference in the severity of the affection depended, in each instance, upon the systemic condition of the persons affected. Therefore I believe that we can not be too cautious in regard to all cases of sore throat in which there is suspicion of a diphtheritic character; for a person having it in a very mild form may convey it in a very malignant form to another more susceptible individual.

In regard to the extreme precautions mentioned by Dr. Robinson, I quite agree with him that in some instances extreme precautionary measures are unnecessary, providing the patient is kept in a perfectly sanitary condition, and the infectious portions of the disease—all exudate and all expectorations or discharges from the throat—are disinfected or burned, that there may be no danger of communicating the disease to other persons. It is of the utmost importance that these precautions of thoroughly destroying all exudates should be observed, for if they are permitted to become dried and float in the air, communication of the disease may more readily take place.

In regard to the treatment of these cases, I use locally, in nearly all instances, peroxide of hydrogen in a twenty-per-cent. solution, and have found it an excellent remedy, not only in rendering the membranous exudate innocuous, but in preventing the further invasion of the disease. In using this remedy care should be taken to procure a solution as free from acid as possible. I have found this remedy more effective than bichloride of mercury, for a solution of the latter strong enough to have the desired effect upon the membrane would be intolerable.

Dr. Alexander MacCoy: Some years since in my own family the appearance of membrane, accompanied with sore throat, was of frequent occurrence, and would have caused me the greatest anxiety had I not had a method of excluding true diphtheria—an arbitrary method, it is true, but clinically considered a very comforting one. It is as follows: As long as the membranous exudate remained marginal, confined *strictly* to the surface of the tonsil, I felt no alarm. In true diphtheria the membrane will rapidly spread beyond the tonsil. Involvement of other than tonsillar tissue I regard as true diphtheria. Cases of acute follicular amygdalitis, or pseudo-diphtheria, if you will, are always marginal in my experience. They belong to another category of diseases than that of true diphtheria. I am in accord with other observers who regard membranous amygdalitis as one of many manifestations of a rheumatic diathesis. The treatment by rapid elimination has found most favor in my own experience. In certain cases of true diphtheria—accepting a specific bacillus as the cause—we are often left in doubt as to the diagnosis if we fail from any cause to find the bacillus. This applies especially to the *exceptional* cases where the membrane is confined for some time to the tonsils.

Dr. J. C. Mulhall: I do not believe there is a member of this association who doubts that there may be a membranous inflammation of the throat which is not diphtheritic. Can any one doubt that *any* mucous membrane of the body may be the seat of inflammation attended by the formation of membrane which is not diphtheritic? For instance, the mucous membrane of the rectum. But if not diphtheritic, what is it? I think this association should elucidate the question of membranous sore throat which is not diphtheria. Working in this line, I published a paper recently and detailed some cases of membranous sore throat which I thought were proved conclusively to be caused by the influenza. Why we did not see such cases during the epidemic the winter before I am unable to explain, but my attention was called to it last October in such a way that I could not help noticing it—namely, in my own child. I examined the condition perhaps six to ten times a day with perfect illumination, and the rule laid down by Dr. MacCoy—that so long as the exudate is marginal it is not true diphtheria—did not in this case hold, for it was not marginal. The membrane was on the tonsil, on the pharynx, and also on the uvula. There was also high temperature, yet catarrhal symptoms were almost totally absent; there was little or no swelling of the tonsils, little or no œdema of the soft palate. The membrane was well defined, but quite thin; was white, but not of the dirty white seen in diphtheria, yet there was enlargement of the glands at the angle of the jaw, with the general depression which accompanies diphtheria. The membrane disappeared about the eighth day, no local applications whatever having been made. That was the first and mildest case which I have seen of membranous sore throat attending the influenza; since then several have come under my observation. Three were seen in consultation, and in all it was agreed that it was not diphtheria, and that the houses should not be posted. One could not mistake such cases for diphtheria after having had them under observation a day or two. In diphtheria there is a catarrhal inflammation surrounding the membrane, while here the catarrhal inflammation was almost wholly absent. The edge of the membrane did not proceed in so crescentic an area as in diphtheria, the glands were not enlarged to the same extent, there was not such great depression; there was the alternate flushing and chilliness so common in *la grippe*, but I believe that in all cases of membranous sore throat there is a diathetic condition behind it. I am sure that there are cases of malarial membranous sore throat; I have the records of some such cases in which the membrane disappeared within twenty-four hours after cinchonizing the patient.

I am not in accord with Dr. Robinson with regard to labeling houses. People who do not enter houses in which there is diphtheria are not likely to contract the disease. And suppose it does alarm the public, is this not better than to spread the disease? Regarding cubeb, I believe it is mentioned in Morell Mackenzie's work, but I fail to see how, if diphtheria kills by the absorption of ptomaines, this agent can be of service.

Dr. Wright: I would not be understood as saying that there are no cases of membranous inflammation that are not really diphtheria. On the contrary, there are a number.

Dr. Robinson: This discussion has been very instructive to me. I will not try to review it all, but should like to have one or two points go forth from this association strongly emphasized, and carry such weight as they necessarily will, being the expression of opinion of specialists devoting study to this subject. The chief point is a statement of the uncertain position which we must yet necessarily occupy with regard to certain forms of sore throat. The public should in some way learn through the general medical profession that there are cases of membranous deposit in the throat, accompanied by general phenomena, more or less severe, which we are justified in pronouncing not diphtheria, which we are able to manage intelligently and without the obligation of at once naming a dread disease and thus possibly sounding a false alarm.

I differ entirely with Dr. Mulhall on the advisability of posting houses; I consider it highly pernicious. As bearing on this point I may mention the fact that at a meeting of the Practitioners' Society of New York the past winter Dr. Henry F. Walker read a very able and attractive paper, taking the view that croupous pneumonia was a contagious disorder, and that therefore it devolved upon the physician to warn the family and friends, and to take such measures as would prevent as far as might be exposure of the well. Now, in some remarks upon that paper, I tried to express the view that it would be highly pernicious to have the public look at it in that way. It is not exactly the scientific view that I am now arguing; it may not be exactly the medical aspect, but it seems to me to be the view of common sense. I believe it is prejudicial to the comfort of families and to the general well-being of the public, certainly prejudicial to the comfort of the practitioner of medicine, to carry too far the idea of contagion of very many acute diseases. I should be very loath to see that idea carried beyond the point at which it would prove practically useful. So much in general terms. Specifically, I disagree with Dr. Mulhall regarding the posting of houses in diphtheria, because I think there is very little evidence that the disease is conveyed through the air, except immediately about the patient. I do not believe this of measles, scarlet fever, and small-pox, but I do believe it is true of diphtheria. A contrary view acts perniciously on the public.

Two or three summers ago I had at Newport a case of throat trouble which I feared might be diphtheria, yet it was not of malignant type and I doubted whether it was a genuine case. So, while taking due precautions, I chose not to notify the board of health, as that would mean the labeling of a house at the end of one of the most traveled avenues and would cause alarm throughout the entire town and do much mischief. Last summer I had a case in the same city which for ten days I thought was one of typhoid fever, yet I reserved my diagnosis, kept the patient in a private room, and at the end of that time was able positively to say that it was a case of malarial poisoning. By this conservative course, waiting until a positive diagnosis was possible, a large amount of money and much trouble were saved the person whose house was rented, as well as the general public.

I should like very much indeed to have a statement go forth from this association expressing an intelligent appreciation of the difficulties involved with reference to diphtheria, and what should be our conduct in cases of doubtful diagnosis.

(*To be continued.*)

NEW YORK SURGICAL SOCIETY.

Meeting of October 26, 1892.

The President, Dr. Arpad G. Gerster, in the Chair.

Cleft Palate and Hare-lip.—Dr. John A. Wyeth presented a child having this deformity. The cleft was quite a large one and there was absent about three quarters of an inch of lip on the left side. The speaker showed the patient to illustrate a new method of operating in such cases. Up to the time he had begun this operation, he had always been dissatisfied with the results obtained by the older methods of operating in cases where the cleft was very extensive. He had operated three times by the new method and had obtained a very satisfactory result in each case.

The operation had been as follows: In order to obtain a solid base for the lip and the receding ala nasi to rest upon, and, at the same time, close the cleft, he had freshened the two free edges of the bones, then the superior maxilla on the deficient side had been cut through with a bone forceps far enough back to afford a good solid foundation for the lip and nose to rest upon, when the fractured or severed portion had been advanced and fastened to the opposing bone by a silver wire. The fractured bone had received its nutrition from the soft parts left intact. This operation should be done at least six weeks before any attempt was made to alter the hare-lip. Then, when the lip had been operated upon, the resulting deformity would be very inappreciable, if it was at all noticeable. The child shown had been subjected to only the first operation. The cleft had almost completely closed, and the anterior margin of the superior maxilla was quite good. The space between the two fractured ends of the bone had been left to be filled up by granulation tissue.

Pes Valgus.—Dr. Frederick Lange presented a patient who had been shown once before, after the operation had been performed, and was now brought to show the definitive result. On the right foot the speaker had operated according to Trendelenburg's method (supramalleolar osteotomy and tenotomy of the flexor and peronei muscles). On the left foot he had done cuneiform resection in Chopart's joint and removed a large wedge of bone. Both feet were now in much the same position —they were still flat, though to a much lesser degree. The patient walked as though there were motion at the ankle joint only. There was no pain at present and the patient was able to attend to his regular business. On the inside of his shoe he wore a spring, which lifted the inner edge of the foot.

Removal of a Pin from behind the Cæcum.—The patient, a carpenter, forty-seven years old, had come under Dr. Charles K. Briddon's treatment at the Presbyterian Hospital on August 24th. His trouble had first been recognized six weeks before. It had begun with a dull pain in the right iliac fossa, and had increased slightly, but had given no severe trouble. Occasionally it had interfered with locomotion and caused a slight limp. About August 18th the pain had increased so much that he had determined to seek relief in the hospital. At that time he was well nourished, his general health was fair, his tongue was moist and clean, his bowels were regular, there was no renal complication, the urine was normal, the temperature was 99·8°, the respiration was 30, and the pulse was 94. The right iliac fossa was filled with a tumor reaching nearly to the median line and to a point two inches above the anterior superior spinous process; exceedingly solid, resistant, and insensitive to deep pressure. The epigastric vein was enlarged. There was considerable doubt expressed as to the character of the tumor. It was thought that it might possibly be one of those infrequent cases of appendicular inflammation, chronic in character and walled in by voluminous exudate. A very slight rise in temperature pointed to that diagnosis, but the extreme induration and insensibility to pressure appeared adverse to such a condition. Between this and peritoneal neoplasm it was considered possible to determine only by an exploratory operation. The operation was performed on September 23d, under ether narcosis. The usual antiseptic precautions were observed.

An incision about five inches in length was made an inch above and parallel with the anterior fourth of the crest of the ilium and the same distance above the outer half of Poupart's ligament. After a division of the superficial layer of muscles had been made, it was found that the deeper layer had become infiltrated and pale. When the transversalis fascia had been exposed a considerable portion of the mass came into view. It was found possible to separate and crowd over the peritonæum toward the median line, thus exposing a considerable portion of the mass itself. Through this surface an aspirating needle was passed at different points, and at each introduction the instrument appeared to pass through solid material. No cavity could be made out. An attempt was made to separate the mass from the internal surface of the ilium. After lifting it up for a distance of about two inches, the operator's finger detected a point on the lower surface that appeared to be less resistant, and, on being crowded inward and upward, it felt as if the finger were passing though soft sarcomatous tissue, and this seemed more than probable, as, on withdrawing the finger, it was found to be covered with a material resembling the softer varieties of such tumors, but that, of course, was broken-down granulation tissue. On introducing the finger again (and it was to be understood that it at no time entered a cavity), its point came in contact with a foreign body which, on examination, proved to be a pin. The pin had lain immediately behind the cæcum, but whether it had perforated that viscus or the appendix must for the present be a matter of conjecture. The wound was partly closed and dressed. On October 23d it had fully healed and the patient was discharged.

Dr. Robert Abbe had seen the patient before the operation, and had wondered that such a small focus could produce such an inflammatory mass. He had had a somewhat similar case, with a pin for a focus, but the mass of granulation tissue had not been nearly so large as in Dr. Briddon's case.

Excision for Bony Ankylosis of the Elbow Joint in Extension.—The President showed two patients on whom he had operated for this condition. The first was a girl, fifteen years old, born in Roumania, who had had measles five years before. After convalescence, the right elbow had become swollen. Several months later the joint had opened spontaneously on the posterior surface, and had discharged for about six months. At about this time motion had become limited. For about four years complete ankylosis had now existed. On June 3d the operation was performed under chloroform anæsthesia. After the elastic constrictor had been applied close to the axilla, a longitudinal incision about eight inches in length was made over the posterior surface of the joint. With scalpel and elevator the periosteum was stripped from the bones. An unsuccessful attempt was made to flex the forearm, but the bones had become too firmly united. Accordingly, with the chisel, wedges of bone were removed from either side of the olecranon. After this, the synostosis parted and the elbow was readily flexed. The ends of the radius, ulna, and humerus were sawed and trimmed off, so, however, as to preserve the prominent features of the outlines of the joint. The lower end of the humerus was made to accommodate the olecranon. The parts were thoroughly irrigated. One bleeding point had to be ligated. The wound was sutured with catgut, one angle of it being left patulous for drainage. No drainage-tube was employed. The forearm was put up in a slightly flexed position in pasteboard splints and a starch bandage. On June 4th the temperature was normal, on the 11th the patient was out of bed, and on the 13th the wound had its first dressing. It had healed aseptically. The arm had been put up at an angle a little beyond a right angle, to be dressed every third day, and the angle to be varied at each dressing. On July 8th, under nitrous-oxide anæsthesia, the elbow was flexed and extended, and then dressed each second day. On the 13th Lange's articulated steel splints were applied, enabling the patient to flex and extend the joint. On August 3d the patient was discharged with a very useful joint, having almost perfect flexion, with extension limited at about 135°. There was no lateral mobility whatever, and an almost normal outline and position of the joint were prominent features.

The second patient was a German woman, twenty-three years old, who had come under observation on June 15th. Her father had died of phthisis; her mother, of paralysis and endocarditis. About sixteen months before, she had caught cold and had gone to the hospital complaining of sore throat, headache, and some pain and tenderness in the left elbow. Shortly thereafter she had become unable to move her elbow and had remained under treatment three months for "inflammatory rheumatism." Poultices, iodine, cold, etc., had been used in the treatment. The whole arm was swollen and the shoulder painful. The muscles of the left side of the neck had become stiff and painful. The head had been held in a backward position. The arm continued painful when the patient had left the hospital, and she had kept it in plaster of Paris for months afterward. Since then she had had occasional pain in the joint, which remained perfectly stiff in an extended position. On June 24th, under chloroform anæsthesia, a longitudinal incision, six to seven inches long, was made over the middle of the joint on the posterior surface. The middle of the incision corresponded to the olecranon and it extended down to the bony structures. The periosteum was carefully separated from the lower extremity of the humerus and from the articular portions of the radius and ulnar, the entire upper ends of these bones having been laid bare. The joint was found firmly ankylosed. With chisel and mallet the olecranon was separated from the trochlea of the humerus. Likewise the head of the radius was separated; thus were the bones of the forearm freed from the lower end of the humerus. With saw and chisel thin strips of bone were removed from the articular ends, carefully preserving the outlines and shape of each bone. The ankylosis between the radius and ulna was also freed by the removal of some bony material. The wound was then sutured with catgut and dressed with the arm slightly flexed and the forearm midway between pronation and supination. On June 25th the temperature ranged from 100° to 101·5°. On July 4th, at the first dressing, the wound was found clean and aseptic. Dry dressing was applied and the wound was dressed every second day. On the 6th extension was almost complete; flexion, 110°. There was paralysis of the fingers from the pressure of the constrictor used during the operation. Faradism was applied daily for ten minutes. On August 20th the patient was discharged, cured. At present the paralysis had disappeared entirely. In this as in the preceding case the normal outlines of the elbow and the absence of the slightest trace of lateral mobility were remarkable. Flexion was nearly normal, extension free to an angle of 160°.

The speaker did not think much of passive motion in such cases. He had used only active motion in these cases after operation. He also considered it very necessary to use the splint mentioned to prevent any possible lateral motion and, at the same time, allow of the hinge motion of the joint. Lateral motion in the joint would destroy its usefulness to a great extent. In both cases the outline of the joint had been excellently preserved, and the motion was very satisfactory. The freedom of motion would doubtless increase in time.

Operative Interference in Cases of Cerebral Hæmorrhage not due to Traumatism.—Dr. Frederic S. Dennis read a paper having this title. (See page 701.)

Dr. Briddon said that several years ago he had operated upon a patient that had come into the hospital in a condition of coma. On cutting down to the dura, a large quantity of bloody fluid flowed out. There had also been large granulations on the dura, resembling trachoma. The autopsy had revealed pachymeningitis hæmorrhagica interna. He had not before been familiar with the condition, and did not recognize it at the time. The pressure had not been localized, but general. He had thought it well to relieve the brain of the pressure of the fluid.

Dr. Dennis showed a number of specimens illustrating his paper.

Miscellany.

Dr. Biggs's Report on the New York Cholera Cases of September, 1892.—We are indebted to the board of health for a copy of the following report by Dr. Hermann M. Biggs, the board's chief inspector in the division of pathology, bacteriology, and disinfection:

December 13, 1892.

To the Hon. Charles G. Wilson, *President of the Health Department.*

Sir: I have the honor to submit the following report of the pathological and bacteriological work of this department during the outbreak of cholera in this city, which occurred during September of the present year.

In this work I secured the co-operation of Dr. Edward K. Dunham, of the Carnegie Laboratory, who has had large experience in biological work connected with Asiatic cholera at the Hygienic Institute in Berlin, and I desire to acknowledge here my great indebtedness to him for biological investigations in this connection.

As bearing upon what is to follow, I desire to direct attention to certain features in the diagnosis of Asiatic cholera. It is admitted by all clinicians of experience that a differential diagnosis between sporadic and Asiatic cholera can not be made on the clinical history alone. In the absence of an epidemic of Asiatic cholera, or the proof of direct exposure to infection from Asiatic cholera, no one is justified on the clinical history alone in making a diagnosis of this disease. In the beginning of an epidemic of Asiatic cholera the first cases are always doubtful cases, and often their true nature is not recognized until the disease has become epidemic.

It is not very unusual to see cases of sporadic cholera presenting the exact clinical picture which is presented in the severest types of epidemic cholera, and, on the other hand, it has been the testimony of all observers in the recent epidemics in Europe that frequently epidemic cholera takes such a mild form, and resembles so slightly the severer types of the disease, that any suspicion as to its nature would not be aroused, were it not for the existence of the epidemic, or the results of biological examinations.

In 1884 the German Government sent a commission, of which Dr. Robert Koch was the head, to Italy, Egypt, and India, to study Asiatic cholera, and to determine if possible its cause. A peculiar organism was found in the intestinal contents and in the intestinal discharges of cases of cholera, occurring in the epidemics in Italy and Egypt and also in India, where the disease is endemic. This organism, because of its curved form, was originally called the cholera comma bacillus, but is more properly called the cholera spirillum. Koch showed by his investigations that this organism was present almost in pure culture in the intestinal contents and in the intestinal discharges from cholera patients during the height of the disease, that it bore a definite relation to the course of the disease, appearing with severe symptoms and disappearing as severer manifestations passed away; that it was never found in any other disease, and that it might be cultivated in various substances outside of the living body.

Several other micro-organisms were afterward described by other observers (one of which occurs in the human mouth, another in a form of sporadic cholera, a third in stale cheese), which resemble very closely in their morphological appearance the cholera spirillum. But when all the biological characteristics of these various organisms are considered, they can with great certainty and ease be differentiated from each other.

It is now admitted by all prominent bacteriologists of the world, so far as I am aware, that the spirillum of Koch is absolutely characteristic and pathognomonic of Asiatic cholera, and that its biological characteristics differentiate it with certainty from all other micro-organisms. When this organism is found, the diagnosis does not remain longer a question of opinion, but becomes a scientific fact, regarding which there can be among competent observers no difference of opinion. To determine the nature of the organisms, however, it is necessary to not merely examine microscopically the intestinal contents or discharges, but to isolate and cultivate the spirillum in suitable media, and to study its characteristics. This process requires for the identification of the cholera spirillum in different cases, according to the conditions, from two to four days.

The second occasion in the history of cholera epidemics in any part of the world in which biological examinations were practically resorted to for the diagnosis and exclusion of this disease was in the cholera epidemic which occurred at the New York Quarantine Station in 1887. Dr. William M. Smith, then health officer, brought to me culture tubes inoculated from the intestinal contents of a child who had died with what had apparently been cholera morbus. The vessel from which the child had been removed was supposed to be free from infection, although she had sailed from an infected port. Dr. Smith requested an opinion as to whether the disease which caused death was sporadic or epidemic cholera, and offered to hold the vessel until the question was determined. The examination by three independent observers (Dr. Prudden, Dr. Weeks, and myself) showed at the end of forty-eight hours that the disease was Asiatic cholera. Four hundred immigrants were then removed from the vessel, and several days later a number of other cases occurred among them. Asiatic cholera was then only excluded from New York city by reason of the biological examinations.

In view of the above-mentioned facts, the importance of biological examinations in the diagnosis of Asiatic cholera is, it seems to me, at once apparent.

The first case referred to me for investigation was that of a laborer, Charles McAvoy, aged thirty-two years, who died on September 7th, after an illness of about thirty-six hours' duration. He had suffered from severe watery diarrhœa and vomiting, accompanied by persistent cramps in the abdomen and limbs. Collapse and death followed. This case was reported to the Health Department by the physicians in attendance as probably one of Asiatic cholera.

At the autopsy, such lesions as may be found in cases of death from both sporadic and epidemic cholera were present. In the absence of any evidence of exposure to infection from epidemic cholera, and inasmuch as the microscopical examination of the intestinal contents was negative, and the anatomical lesions found in both sporadic and epidemic cholera may be so nearly identical as to make a differentiation on this ground impossible, the conclusion was reached, provisionally at least, that this was a case of sporadic cholera, and the cause of death was so returned to the Health Department.

A biological examination, however, was immediately begun, and on the 10th of September the investigation had proceeded to such extent that it was considered certain that it was a case of epidemic cholera. Realizing very fully, however, how many and what important interests were at stake, an official report was not presented to the Health Department until several days later, after the diagnosis had been confirmed by Dr. T. Mitchell Prudden, consulting physician to the Health Department in the division of pathology, bacteriology, and disinfection. A report was then forwarded to the department correcting the original diagnosis, and reporting this as a case of epidemic or Asiatic cholera. During the month following this, nine other cases occurred in New York city and one in New Brunswick, N. J., in which a diagnosis of Asiatic cholera was made, either on the ground of the biological examination, or, in two or three cases where no biological examinations were made, on the clinical history and the association of the patients with cases of Asiatic cholera. Twenty-four suspicious cases in all were examined biologically, in a number of instances repeated examinations being made.

Of the eleven cases of true epidemic cholera (including the New Brunswick case) nine died; among the others, which biological examination showed to be sporadic cholera, no deaths occurred. The clinical history in all the cases of true cholera was nearly the same—namely, vomiting, watery diarrhœa attended with severe cramps in the abdomen and legs, collapse, and in most cases death, the whole duration of the illness varying from six or eight hours to thirty-six hours, and in one instance to five days.

The material used for the biological examinations in most of the cases, which proved to be epidemic cholera, was obtained from the intestinal contents after death, as these cases, with one exception, occurred before or almost immediately after they were first seen by the Health Department inspectors. In one case the intestinal discharges passed before death were examined, and in the suspicious cases (which proved to be sporadic cholera) the intestinal contents were always the material submitted for examination. In one or two instances the material presented for examination was in the form of soiled clothing. The results of the biological examinations in all the cases of epidemic cholera were identical; the same micro-organism (the cholera spirillum),

BACTERIOLOGICAL EXAMINATIONS IN SUSPECTED CHOLERA CASES, SEPTEMBER AND OCTOBER, 1892.

No.	Sample received.	Character of sample.	Direct microscopical examination.	Culture results.	Relative proportion of cholera bacilli to total number of bacteria.	Results reported.	Remarks.
1	Sept. 7.	Intestinal contents.	Inconclusive.	Cholera.	About 20 per cent.	Sept. 13.	Died Sept. 7.
2	Sept. 9.	" "	"	Not cholera.	....	Sept. 11.	Autopsy by Dr. H. P. Loomis, who reported death as due to meningitis.
3	Sept. 11.	Cloth, stained with dejecta.	Negative.	"	....	Sept. 14.	
4	"	Intestinal contents.	"	Probably cholera.	....	"	Died Sept. 10. Body had been embalmed before autopsy. Report based on next case (No. 5).
5	Sept. 12.	Dejecta.	Cholera spirillum present.	Cholera.	About 100 per cent.	"	Died Sept. 11. Wife of William Wiegmann (No. 4).
6	"	Intestinal contents.	Inconclusive.	"	Abundant.	"	Died Sept. 11.
7	Sept. 14.	" "	"	"	Not noted.	Sept. 16.	Died Sept. 13.
8	Sept. 15.	Vomit.	"	Not cholera.	....	Sept. 17.	
9	"	Cloth, stained with dejecta.	Negative.	"	....	"	
10	Sept. 19.	Dejecta.	....	Cholera.	....	September.	Died Sept. 23.
11	"	Cotton and clothing soaked in dejecta and dirty water.	Not made.	"	Not noted.	"	Died Sept. 18. Examination made at request of authorities of New Brunswick, N. J.
12	"	Intestinal contents.	Inconclusive.	"	....	"	Died Sept. 18. Stoker on S. S. Nevada.
13	Sept. 21.	Dejecta.	Not made.	Not cholera.	....	Sept. 23.	
14	"	Vomit.	"	"	....	"	
15	"	Dejecta.	"	"	....	Sept. 24.	
16	"	"	"	"	....	"	
17	"	Intestinal contents.	"	"	....	Sept. 23.	
18	Sept. 22.	Dejecta.	"	"	....	Sept. 24.	Second sample, case No. 16.
19	"	"	"	"	....	"	Second sample, case No. 15.
20	Sept. 23.	"	"	"	....	"	Second sample, case No. 13.
21	Sept. 26.	"	"	"	....	Sept. 30.	
22	"	"	"	"	....	"	
23	Sept. 28.	"	"	"	....	"	Second sample, case No. 22.
24	"	"	"	"	....	"	
25	"	"	Inconclusive.	Cholera.	About 30 per cent.	Oct. 1.	Died Sept. 29.
26	Sept. 29.	Intestinal contents.	"	"	About 88 per cent.	"	Died Sept. 29. Second sample, case No. 25.
27	Oct. 4.	Cloth, soaked with dejecta.	Not made.	Not cholera.	....	Oct. 8.	
28	Oct. 5.	Stomach contents.	"	"	....	"	Second sample, case No. 27.
29	"	Intestinal contents.	"	"	....	"	Third sample, case No. 27.
30	Oct. 7.	" "	"	"	....	Oct. 9.	
31	"	Stomach contents.	"	"	....	"	

showing the same biological characteristics in all respects, was found. In some of the cases the cholera spirillum formed more than ninety per cent. of all the micro-organisms present in the intestinal contents.

The anatomical lesions and post-mortem appearances in all of the cases were the same, and are so striking and so unusual in autopsies in this latitude as to constitute in themselves strong but insufficient ground for a diagnosis.

The cultures from several of the later cases before an official report was forwarded to the Health Department were examined at my request by Dr. T. Mitchell Prudden and Dr. Henry P. Loomis, and the diagnosis was confirmed by them, and their names were appended to the reports. After several cases had occurred, that there might be ample confirmation of the original diagnosis, cultures were sent to Dr. Harold Ernst, professor of bacteriology in the Harvard Medical School; to Dr. George M. Sternberg, deputy surgeon-general of the United States Army, who, during the epidemic, at the suggestion of the advisory committee of the Chamber of Commerce, and at the request of Dr. Jenkins, was detailed as consulting bacteriologist to the New York Quarantine Station; Dr. J. M. Byron, director of the bacteriological division of the Loomis Laboratory, who, during the epidemic, was placed by Dr. Jenkins in charge of the hospital at Swinburne Island; Dr. William M. Welch, professor of pathology in the Johns Hopkins University, Baltimore; and to Dr. Petri, chief of the bacteriological department of the Imperial Board of Health of Germany. The identity of the organism found in these cases with that of the cholera spirillum of Koch was confirmed by all of these observers, and, furthermore, Dr. Byron and Dr. Sternberg confirmed the identity of these organisms with those found in the cases that occurred on the cholera-infected vessels and on Swinburne Island. Unusual precautions were taken in this matter that there might be no possibility of doubt as to the nature of the disease with which we had to deal.

The post-mortem appearances and the anatomical lesions in the cases of Asiatic cholera, eight in number, in which autopsies were performed, were very striking and were practically identical. The face had a peculiar drawn expression, the cheeks and eyes were much sunken, and the cheek bones were very prominent. The extremities of the nose, fingers, and toes were shriveled and often cyanosed. The extremities (arms and legs) were semiflexed, with the toes drawn under and the fingers clinched, rigor mortis was very much marked, and in some cases the temperature post mortem remained high for some hours. On opening the abdomen, the coils of intestines presented a peculiar rosy tint, which was especially marked in the coils of the ileum. The small intestines especially were, as a rule, markedly distended with fluid contents. All of the parenchymatous organs showed cloudy swelling and appeared congested. The brain and its membranes were also congested. The blood everywhere was fluid, or showed only a few soft dark clots.

The mucous membrane of the stomach and intestines presented few changes to the naked eye, excepting marked prominence and swelling of the patches of Peyer and the solitary follicles in the lower part of the ileum. The intestinal contents showed in all cases a striking absence of biliary coloring matter or anything resembling ordinary fæces. The intestinal contents were usually large in amount, had a gruel-like consistence, and a slightly pinkish hue. If placed in a vessel and allowed to stand for some hours, a white sediment formed, leaving an almost clear supernatant fluid having a pink tinge. The sediment was found on microscopical examination to be made up largely of desquamated epithelial cells from the mucous membrane, mucus, micro-organisms, and granular detritus.

The bladder was usually empty. In a few cases there was a peculiar marked dryness of all the organs.

The post-mortem appearances and the anatomical lesions, together with the absence of any sufficient anatomical cause for death, produce a picture that is unlike that seen in any other disease, excepting those comparatively rare cases of sporadic cholera, which present the same clinical histories.

In my annual report to this department I shall give a description of the method employed in the biological diagnosis of Asiatic cholera.

A table is appended, giving the important data regarding specimens from suspicious cases which were examined bacteriologically.

The Treatment of Hæmorrhoids.—At a meeting of the Philadelphia County Medical Society held on November 23d Dr. John B. Deaver opened a discussion with the following remarks:

To understand the origin of piles we must be familiar with the arrangement of the veins of the rectum. The hæmorrhoidal veins number three—the superior, middle, and inferior. The superior empty into the portal system, while the middle and inferior empty into the general venous system. In the upper part of the rectum they are arranged longitudinally, while below they are arranged circularly in the shape of a plexus, the hæmorrhoidal, situated between the mucous and muscular coats. As the hæmorrhoidal veins are destitute of valves, also owing to the office of the rectum and to the erect position, these veins are very liable to become dilated and varicose.

To speak of a dilated and varicose condition of the veins in themselves constituting a hæmorrhoid is a mistake. The first step in the formation of a hæmorrhoid is a dilated and varicose condition of the veins, I admit, but, in addition to this condition of the veins, there must be associated with it inflammatory exudate.

Hæmorrhoids are divided into three varieties—external, internal, and intero-external. Hæmorrhoids which protrude at stool, and are capable of being replaced and retained within the sphincter, are of the internal variety, while hæmorrhoidal tumors situated outside of the sphincter which can not be forced inside are of the external variety. The intero-external variety is a combination of the external and the internal. This variety occupies the verge of the anus, and is covered by both mucous membrane and skin.

The internal hæmorrhoid is a varicose and dilated condition of the superior hæmorrhoidal vein, therefore an affection of the portal system. The external hæmorrhoid is a like condition of the middle and inferior hæmorrhoidal veins, therefore an affection of the general venous system. In the intero-external variety both sets of veins are involved.

External hæmorrhoids are met with in any one of three different forms. The first is simply a venous tumor, the result of a phlebitis and consequent thrombosis of a varicose vein; the second, a tumor composed of dilated and varicose veins with proliferation of the surrounding connective tissue; the third, a tumor made up almost entirely of proliferated connective tissue.

Internal hæmorrhoids are met with as one of two forms: the capillary and the venous. The capillary hæmorrhoid is composed of the terminal branches of the arteries and veins and intervening capillaries. It is this form of hæmorrhoid which bleeds upon the slightest irritation; its surface, too, is granular, and presents somewhat the appearance of a strawberry. The venous hæmorrhoid is made up of anastomosing veins and connective tissue; this I regard as but an advanced stage of the capillary hæmorrhoid.

The treatment of hæmorrhoids is palliative and radical. Concerning the palliative treatment I will have but little to say other than that I regard having the bowels move daily, and observing the strictest cleanliness, the two most important indications to be fulfilled. Doubtless, in some instances one or other of the various astringent ointments, so commonly used, may be of some advantage, yet I have little faith in their accomplishing a cure.

Before recommending radical treatment, the case is first to be thoroughly examined to determine whether such a procedure is justifiable.

Hæmorrhoids may be symptomatic of visceral disease, of structural changes in the wall of the rectum above the pile-bearing area, such as carcinoma, stricture, etc. Under these circumstances the proper treatment would be the correction, if possible, of the condition giving rise to the hæmorrhoids. Again, they are often secondary to disease of the uterus, the bladder—as when a calculus is present—an enlarged prostate or a stricture of the urethra, etc.

In advising radical treatment a careful examination should be made first to determine whether any of the previously mentioned conditions are present or not. The urine is to be carefully examined, when, if albumin is present and dependent upon heart or kidney affection of a serious character, operation is to be strongly advised against.

The Radical Treatment of External Hæmorrhoids.—In the first form, that of the venous tumor, the result of a phlebitis, thrombosis, etc., it will suffice to incise the tumor freely and turn out the clot, after which the wound is to be packed gently and thus favor healing from the bottom. In the second variety, that of dilated and varicose veins with proliferation of the neighboring connective tissue, it will often suffice to stretch the sphincter muscles, when, if this fails, I strongly recommend removal of the tumor with the clamp and cautery; in the third variety of external pile I also use the clamp and cautery. In either of the two latter varieties, when the tumor or tumors assume considerable size, it may not be possible to engage them individually in the clamp; under these circumstances they should be bisected, as it were, and each half clamped, the redundant portion cut away, and the pedicle cauterized. It is in this variety of pile, when involving the entire circumference of the anus, where the Whitehead operation is applicable, but so far as my observation goes it does not offer any advantages over the clamp and cautery. When the external pile presents itself in the shape of a tab of skin it will suffice to remove it with a pair of scissors; in the event of bleeding following, it can usually be checked by the application of a wad of styptic cotton, over which is placed a compress and bandage, or the bleeding point may be touched with the point of the cautery. In the second and third forms of external pile, if inflamed, tense, and painful, I think it much more satisfactory to etherize the patient and remove them at once, and not attempt to reduce the inflammation by the application of lead-water, laudanum, poultices, etc. I have found this a much quicker way to dispose of them, and at the same time less painful to the patient.

Operations for Internal Hæmorrhoids. — In few departments of surgery have there been more operations devised for the cure of any one condition than that of internal hæmorrhoids.

The following is a list of the most important which have been advocated: Excision; removal with the wire écraseur; injection with carbolic acid or an astringent; the application of acids; removal by the galvanic cautery wire; dilatation of the sphincter muscles; clamp and cautery; crushing ligature; and Whitehead's operation.

Of these, I have had experience with the clamp and cautery, ligature, injection of carbolic acid, Whitehead's, and dilatation of the sphincter muscles. I now, however, rarely do any other than the clamp and cautery.

The advantages which the clamp and cautery possess over all other procedures is its universal application. The instruments required to perform this operation are a Smith's clamp and a pile forceps, a pair of scissors, and a Paquelin's cautery. A tenaculum or volsella may be used in place of a pile forceps.

The first step in the operation is the dilatation of the sphincter, which is followed by protrusion of the piles. The piles are now grasped with the forceps and the clamp is adjusted. With the scissors the pile is trimmed down, leaving a pedicle a quarter of an inch in length above the clamp. With the cautery iron at a dull-red heat the pedicle is reduced one half, presenting a charred and dry surface. The clamp is now removed and the edges of the stump allowed to fold in. By leaving a pedicle as described, bleeding can not follow the removal of the clamp. In cases where the pile-surface is muco-cutaneous, before the clamp is adjusted the skin should be divided with a pair of scissors, thus eliminating pain and subsequent contraction. The operation is completed by the introduction of an opium suppository, dusting the surface with iodoform, and the application of an antiseptic dressing. The after-treatment consists of rest in bed, light diet, and of the administration of a quarter-of-a-grain opium pill night and morning for from three to four days, when the bowels are moved by a laxative and an enema given when the desire to defecate is felt. After this the patient is allowed the freedom of the room.

The advantages of this operation are freedom from hæmorrhage, the rapidity with which it is performed, the absence of pain in the majority of cases, the absence of retention of urine, and the patient's being able to resume his or her occupation ordinarily in from a week to ten days. Pain, irritability of the bladder, and prolonged convalescence occur in neurotic subjects. Further, I believe tetanus is less likely to follow this than any of the other operative procedures.

The objections to the ligature are the pain which follows the tying of the pile, retention of urine, the amount of blood lost in debilitated subjects, and the prolonged convalescence consequent upon the process of separation of the ligatures.

The objections urged against the injection of hæmorrhoids are the liability of sloughing and fistula, the formation of abscess, the possibility of a diffused inflammation with pyæmia, an extension of the inflammation to the peritonæum, and embolism. While injecting a pile the base should be constricted until coagulation takes place, to prevent an embolus from being carried into the circulation.

The objections to the Whitehead operation are the time required for its performance, the amount of blood lost, and the danger of the stitches cutting out, leaving a circular granulating surface which may result in atresia of the rectum. Again, it is only applicable in a comparatively small number of cases.

Dilatation of the sphincter muscles, like the Whitehead operation, is only applicable in a few cases, especially those of recent origin, and in the case of prolapsed hæmorrhoids which are prevented from repositing themselves on account of being grasped by the sphincters. In the former instance it may suffice to bring about a cure if proliferation has not taken place to any extent, which is always questionable. In the latter case it can only offer a palliative means. When internal hæmorrhoids become strangulated and gangrenous, they should at once be removed, preferably with the clamp and cautery.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

Original Communications.

SOME PHYSIOLOGICAL EXPERIMENTS WITH MAGNETS AT THE EDISON LABORATORY.*

By FREDERICK PETERSON, M. D.,
CHIEF OF CLINIC, NERVOUS DEPARTMENT, VANDERBILT CLINIC, COLLEGE OF PHYSICIANS AND SURGEONS, NEW YORK,

and A. E. KENNELLY,
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Magneto-therapy has not gained such wide-spread application as has electricity in medicine, nor has it won to any great extent the confidence of the medical profession, for its effects are even more occult and less easily demonstrable than, for instance, the trophic influences of galvanism in poliomyelitis and progressive muscular atrophy. At the same time magneto-therapy has its adherents and earnest promulgators, to which any one will bear witness who has observed the transfer of singultus by a magnet from one girl to another in Charcot's dramatic realms at the Salpêtrière, or who has at the Poliklinik watched Benedikt carefully adjust a one-foot horseshoe magnet to the hyperæsthetic spine of a hysterical girl. There are many lesser men than these who have implicit faith in that mysterious force, and there is no dearth of theories to explain the effects of magnetism upon the human organism. Professor Benedikt has taught that erethetic forms of hysteria are better treated by the magnet than by electricity, hydrotherapy, or drugs. A magnet being applied to the sensitive vertebræ, without removal of the dress, the irritable patient soon becomes quiet and even quasi-paralyzed. The magnet, therefore, "increases the resistance to conduction in the motor nerves." The muscles gradually relax, the respiration becomes sighing, consciousness slowly disappears; the resistance to conduction in motor nerves "could easily become absolute." The two poles have different effects. Sometimes one pole to a hyperæsthetic ovary fails to relieve pain, whereas a change of the poles causes its speedy disappearance. According to him, the magnet must be employed with due caution, since patients may be injured by it.

The status of magneto-therapy in America may be inferred from some quotations from the third edition of Roberts Bartholow's *Medical Electricity*, 1887. Under the caption of Physiological Effects of Magnet Applications he says: "We know that a current circulates in a magnet. If a powerful horseshoe magnet is brought near to the skin, opposite electricities are attracted to the poles and currents are induced. About the point of application, therefore, the skin will be acted on directly by the magnetic current and by an induced current. The production of physiological effects, which can be recognized, is therefore merely a question of the magnetic strength."

He then quotes Dr. Vansant as assuming the body to be diamagnetic: "By applying north and south polarity to different parts, very extensive subjective impressions are experienced; they are of two classes—of heightened organic activity, and the opposite condition."

He then adds: "That impressions of a very decided kind are produced by the application of strong magnets is evident in the experience of Dr. Proust and Dr. Ballet, who continued a course of investigation begun by Charcot at Salpêtrière." They ascertained that magnets could not be applied with impunity, for, if applications were prolonged, pains were felt in the epigastrium and thorax, making respiration painful, digestion was disordered, and boulimia brought on. These results were so uniform that there seemed to be no doubt of their genuineness in the minds of the investigators.

Under the heading Therapeutical Application of Magnets, Dr. Bartholow quotes Dr. Hammond as preferring a horseshoe magnet, and advising that several of the same size be kept, so that by clamping them together more power can be obtained. The author adds: "Hammond insists on the necessity for the application of both poles in many cases, and therefore uses the horseshoe magnet."

"Hammond has used magnets in nine cases of chorea, in two, 'complete cures being produced in a few minutes.'"

"In two cases of hemiplegia with hemianæsthesia Hammond had very surprising results from the application of horseshoe magnets, the sensibility returning immediately, and in one the hemiplegia was recovered from in a few hours."

The magnets used by physicians are generally those of a horseshoe shape, varying from a few inches to a foot in length, and are the so-called permanent magnets. They exert a traction force equivalent to several ounces, and sometimes to from one to three or four pounds.

Electro-magnets can be made to sustain two hundred pounds to each square inch, or fourteen kilogrammes to the square centimetre of active surface on either pole—that is to say, twenty-eight kilogrammes to the square of active surface on either pole if both poles are alike and share the load.

While rather skeptical as to the practical utility of the magnet in medicine, it occurred to us that if there was any truth whatever in the claims made by various distinguished authorities, if this interesting and undoubtedly powerful force had any effect at all upon living organic matter, we were in a position to demonstrate its physiological effects by means of magnets of enormous power placed at our disposal at the Edison Laboratory at Orange, N. J., through the kindness of Mr. Edison. Accordingly we made experiments which we detail below, and which we consider as conclusive, in that they have been made with magnets of a strength possibly never before used for such purposes. The description of the magnet employed for preliminary experiments is as follows (Fig. 1):

It is of wrought iron throughout, and its principal dimensions are represented in the sketch in centimetres. Roughly speaking, it is about a foot and a half wide by two feet long and requires two men to lift it. The cross-section of the core is forty-nine square centimetres. The vertical angle of the cones is 36°, and the diameter of their plane faces 0·75 ctm. There are 2,728 turns of wire on each limb, making 5,456 in all, and the current employed in exciting it was approximately 4·5 ampères. The pole faces were 1·20 ctm. apart, and it was between them that objects were placed for observation either with the naked eye or with the microscope. The intensity of the magnetic field between these poles was about 5,000 C. G. S. lines to the square centimetre.*

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* Read before the American Electro-therapeutic Association, October 5, 1892, and before the Section in Neurology of the New York Academy of Medicine, October 14, 1892.

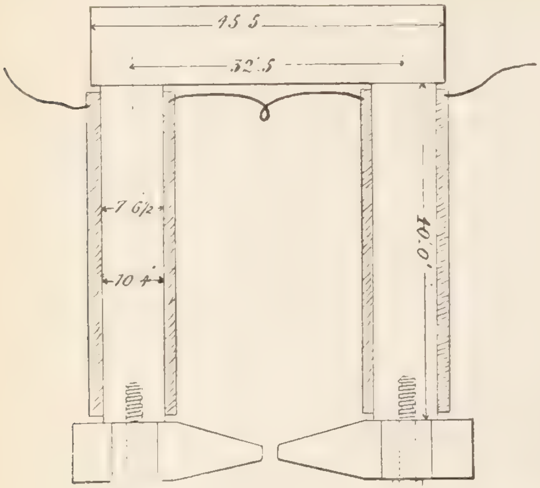

Fig. 1.—Plane section of magnet through core axes. Not drawn to scale.

A drop of water placed on a glass slide in this field was visibly distorted in shape by the magnetic force.

The stage of the microscope was removed and wooden supports substituted. It was necessary to clamp the microscope down to the table to prevent its being drawn upward to the poles.

Nothing peculiar was noted in the effect upon iron in its finest powdered form, iron by hydrogen. It behaved just as iron filings would do, being strongly attracted. Iron by hydrogen placed in water was observed to be polarized by any ordinary magnet under the microscope.

Dry powdered hæmoglobin exposed to the strong magnetic field above described was not visibly affected by it. The iron it contains, however, is exceedingly minute (0·42 per cent.).

It was then thought possible that the iron in loose combination with fresh hæmoglobin in the blood-corpuscles might be affected. Several experiments were made with both human and frog's blood. The blood, placed on slides and covered with a cover-glass, was subjected to the strongest magnetic influence obtainable, and failed to show the feeblest traces of polarization, movement, or vibration.

It must be borne in mind that we were using an electromagnet which we magnetized and demagnetized at will. First one would make the observations, the other experimenter attending to the current; then they were repeated and verified by the other on our changing places.

Living ciliated epithelium from the pharynx of a frog was now in like manner subjected to the magnet, and its behavior watched under the microscope with a high-power objective, as the poles were magnetized and demagnetized by the making and breaking of the 120-volt current in the huge coils. The magnet had absolutely no effect upon the delicate ciliary movement which kept on continuously, nor did it cause the slightest change or vibration in the cells themselves, suspended in the saline solution. After the magnetic observation, a mild continuous electric current of one to two milliampères C. S. was carried through the microscopic field containing the moving ciliated cells, and this also had no effect whatever upon the movement.

Another frog was now taken and curarized, fastened upon a pasteboard frog-plate, and the web of the foot stretched in the usual manner to show the circulation of the blood in the capillaries under high power. As before, the object to be observed was placed between the poles of our magnet and the microscope focused upon it. The poles had to be separated somewhat farther to admit the large foot of the frog. With the clearance thus employed to allow of inserting the frog's foot the magnetic intensity was reduced from 5,000 C. G. S. lines to the square centimetre to 1,500 C. G. S. lines to the square centimetre. Repeated observation by both of us failed to demonstrate the feeblest influence of the magnet upon the blood-cells or their movement in the vessels. At this point we determined to note the effect of the continuous current upon the circulation. A fine copper wire was placed upon one toe and another wrapped in moistened filtering paper above the ankle. The current strength in these trials never exceeded two milliampères, and generally varied between one and two milliampères.

Whenever the current was made the circulation in the foot under the microscope, which was about midway between the two electrodes (three centimetres apart), gradually grew sluggish and finally ceased, complete stasis being produced, the blood-vessels dilating. As soon as the current was cut off, gradually movement made itself manifest in the stagnant capillaries, and, becoming more and more lively, the circulation was in a few moments restored to its normal state. The effect was not due to the magnet, however, for it was observed with the current in the coils made or broken. This experiment was gone over frequently by each of us, so that the facts were fully verified.

It was now resolved to put Benedikt's statement to proof that magnetism "increases the resistance to conduction in motor nerves," thus causing paralysis. For this purpose a set of idle field magnets (Fig. 2) which converge into a cylinder two feet in diameter and seven inches deep was employed. In this cylinder a small and lively young dog was placed and kept for five hours, and subjected during all that time to the influence of a magnetic field whose intensity was from 1,000 to 2,000 C. G. S. lines to the square centimetre. Fig. 2 is taken with a boy inside of the cavity, in which the dog was kept for five hours. The magnets were excited while the photograph was being taken with the boy in it, as is evidenced by the position of the bolt above, and by the bar of iron A B, which not only supports its own weight in this horizontal position when touching the pole-piece, but also supports the wrench at its outer extremity. The chain, too, is magnetically influenced. There was no effect upon the boy. A clearer idea of the power of this magnet may be obtained when I say that heavy bolts, chisels, and pieces of iron in the immediate neighborhood of this cylinder were drawn to it irresistibly, and that it required considerable muscular exertion to remove them. A heavy bolt placed slightly above the center or axis of the cylinder remained suspended for a moment in the air, like Mohammed's coffin, so powerful were the opposing magnetic forces upon it compared with gravitation.

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* C. G. S., or "centimetre-gramme-second," is the unit of measurement employed. The earth's magnetic field, measured horizontally for instance, is estimated to be 0·18 C. G. S. line to the square centimetre near New York. Consequently our magnetic field was 27,778 times that of the earth's horizontal component, that aligns the compass needle.

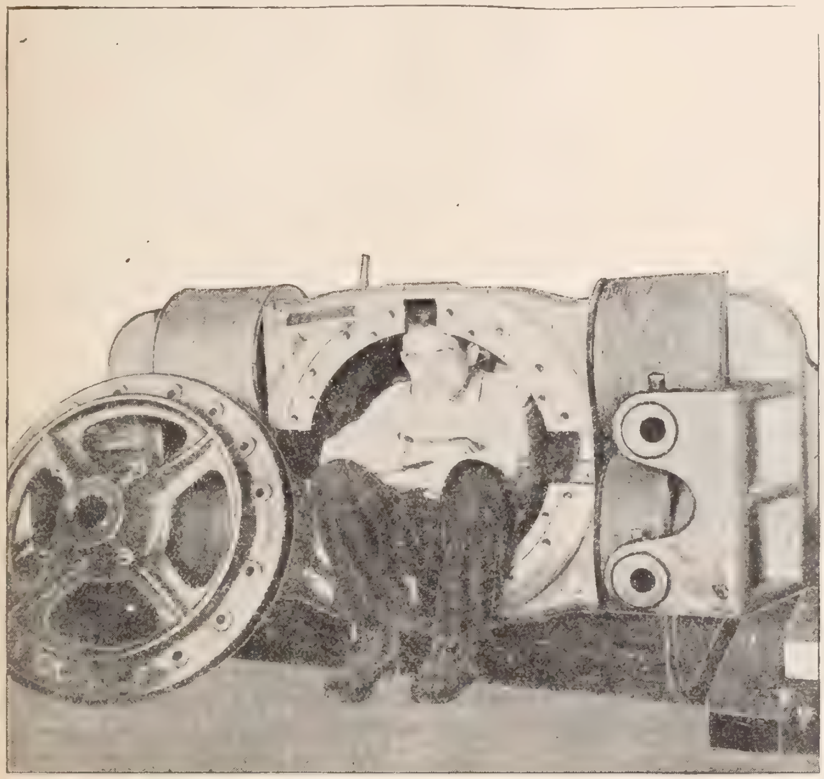

Fig. 2.—Showing field magnets in whose cylindrical cavity a dog was placed. The powerful attraction of bolts and chains is distinctly noticeable. The circular brass cover or door of the cavity is shown at the side.

The five hours' exposure to this influence had not the slightest visible effect upon the animal, which was rather livelier in his capers on being set free than before, owing to his joy at being liberated from the cage.

Our next experiments were directed to studying the influence of magnetic fields on the human brain. The type of dynamo employed for this purpose will be seen in the illustration (Fig. 3). The machine converts about 70 H. P. at full load. The armature and one journal were removed, leaving the space between the pole-pieces free. This will be best understood by reference to the figures. Fig. 4 gives a view of the pole-pieces into the cavity between which the head was to be inserted. This cavity is 35 ctm. (fourteen inches) in diameter and 60 ctm. deep. The weight of this electro-magnet is over 5,000 pounds, and the intensity of the magnetic field produced within the polar cavity after removal of the armature, though not uniform, may be estimated at a mean of 2,500 C. G. S. lines to the square centimetre. A long board was placed upon the base plate leading into this polar cavity, and the subject experimented upon lay on his back upon the board with his head and shoulders in the cavity between the poles, and exposed thus to the full influence of the magnetic field. There would be comparatively feeble residual magnetism with no current in the coils. A switch so nearly silent in action as to be inaudible to the subject was arranged to close and open the exciting current circuit through the field coils. On closing the switch nearly the full magnetic intensity would be active and permeating the head within practically one second (theoretically it takes an indefinitely long time to establish the full current and magnetism). Similarly on opening the switch, almost the whole intensity would disappear in about one second.

Five men, ourselves among the number, were subjected to trial. One case described will describe all.

The subject lay back upon the board and concentrated his attention upon his sensations. His right wrist was extended and was grasped by one observer, who took sphygmographic tracings of the pulse. A second observer placed a hand on his chest to observe any irregularity that might occur in respiration. A third observer, in view of these two but unseen by the subject of the experiment, opened and closed the switch that excited and relaxed the field, signaling to the first two observers as he did so. The strong magnetic influence was therefore turned on or off at will and without the knowledge of the subject. Several sphygmographic tracings were taken in each of our subjects, and in one the knee-jerk was tested continuously.

The sphygmographic tracings taken continuously during the *séance* show no change in regularity, in spite of the making and breaking of the enormous magnetic influence during its registration. The respirations were not changed in the least. The knee jerk also presented absolutely no change. As to common sensations, there were none that could be attributed to the magnetic influence, and the subject could not discover when or whether the field had been excited. The testimony of all five subjects was alike. In one experiment the subject held a steel screw in his mouth, and was then able to tell when the poles were magnetized or demagnetized, but only by the pulling of the screw to one side or another, not by any peculiar sensation or taste.

Our last series of experiments was in connection with reversed magnetism.

A large coil of stout, cotton-covered copper wire, about 30 ctm. high and 25 ctm. internal diameter, composed of nearly 2,000 turns and weighing about 70 kilogrammes, was supported horizontally in such a manner that the head of the subject experimented upon could be freely introduced within the coil, and subjected to the electro-magnetic field created there by passing a current through the wire. The resistance of the coil was 10 ohms, and its inductance 0·73 henry. An alternating electro-motive force of 1,200 volts, making 140 cycles or 280 alternations to the second, was connected with this coil, the current supplied being 1·85 ampères. The magnetic field in the coil would thus be reversed 280 times to the second. Each of the authors acted as subjects in the experiments, permitting the 1,200-volt alternating current to be made and broken frequently in the huge magnetic coil surrounding his head. No effect whatever was experienced. The coil itself hummed with the current, and a strip of sheet iron held in the cavity of the coil, but not touching it, vibrated perceptibly in the hand and gave a distinct, loud sound which was determined to be middle C of the musical scale by means of Helmholtz resonators.

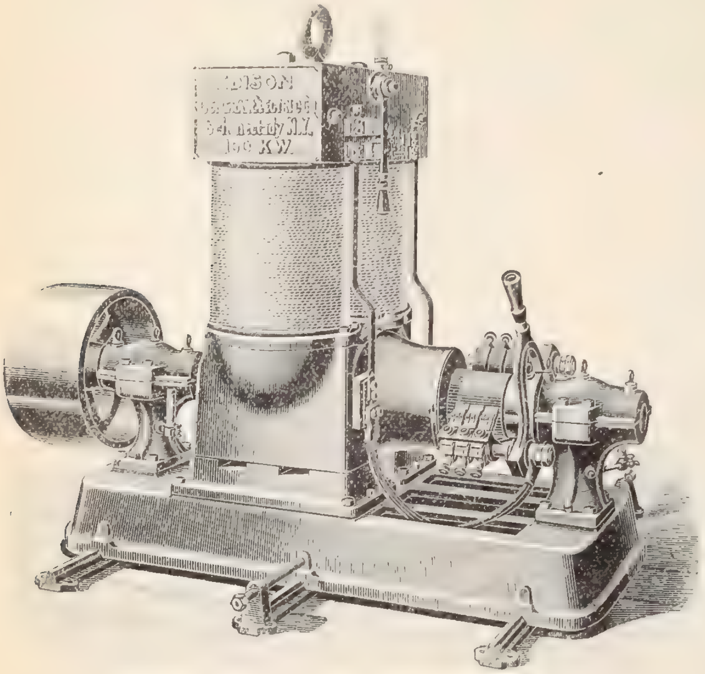

Fig. 3.—Type of dynamo used in experiments on the human head. The armature is in place.

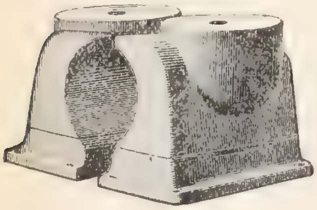

Fig. 4.—Showing merely the pole-pieces of the dynamo, with the armature removed. The head was placed in the cavity between them.

The authors conclude that the human organism is in no wise appreciably affected by the most powerful magnets known to modern science; that neither direct nor reversed magnetism exerts any perceptible influence upon the iron contained in the blood, upon the circulation, upon ciliary or protoplasmic movements, upon sensory or motor nerves, or upon the brain.

While our observations with reversed magnetism indicate that no appreciable influence is exerted upon the brain when subjected to 280 magnetic reversals to the second, we were unable to experimentally alter this frequency, and the possibility remains that some particular frequency or frequencies might affect the nervous system. We hope to decide this question, within a suiable range of frequency, at some future time.

The ordinary magnets used in medicine have a purely suggestive or psychic effect, and would in all probability be quite as useful if made of wood.

While we have demonstrated conclusively the above facts, we do not deny the possibility of there being invented some day magnets enormously more powerful than any yet known to us, which may produce effects upon the nervous system perceptible to some of the sensory organs; for magnetism is certainly a remarkable force, and we find it very difficult to understand why it seems to have no influence whatever upon the human body and its wonderfully delicate neuro-electric mechanism.

ACUTE INFLAMMATORY AFFECTIONS OF THE MAMMÆ,

WITH SPECIAL REFERENCE TO TREATMENT DURING LACTATION.*

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In presenting a paper under this title I realize I have chosen no new subject, but from the diversity of opinion as to the ætiology and treatment of mastitis expressed in the text-books on surgery, and the comparatively little to be found in even the most recent works on obstetrics and gynæcology, I am warranted, I trust, in my selection. That the frequency of mastitis during the puerperal period has been much lessened, both in private and hospital practice, must be attributed to the general and special means employed for prophylaxis against septic infection; yet even with such means the number of cases which one connected with any large dispensary continues to see is considerable. The importance of proper treatment of mastitis is not to be considered as alone due to this lesion, for, as stated by Winckel, strong evidence now exists that a large percentage of the primary carcinomata of the breast are the result of mastitis. When we consider the histology of the mammæ we find we have to deal with exceptionally complex tissues, which, in the performance of their function and close relation to other organs, pass through active changes and are prone to inflammatory lesions. Of the three essential histological elements—the glandular, fibrous, and adipose—the glandular tissue forms a compound racemose gland, but is distinguished from other such glands in not having a single excretory duct, but eighteen to twenty canals, each one of which belongs to the primary lobes, or, indeed, separate glands, the excretory ducts of which open on the nipple, and at the base of which are numerous sebaceous and sweat glands and hair follicles. The fibrous tissue connects the lobes and forms the suspensory ligaments and contains the vessels and lymphatics; the adipose tissue envelops the lobules and lobes. Each of these elements may be the seat of inflammatory action, and, by reason of their anatomical arrangement, afford specially favorable avenues for the entrance of pyogenic organisms. While four out of every five cases of acute inflammatory affections of the breast occur during lactation, we find that next in frequency are those during infancy and at puberty. In infancy, generally shortly after birth, and more often in males than females; at puberty in females, when structural changes in the glandular tissue accompany the establishment of menstruation, and rarely also at puberty in boys, are minor grades of inflammation seen, which in some cases result in suppuration. Besides these periods, when inflammations are more liable to occur in the parenchyma of the breast, we may at any time have diseases of the skin of the areola and of the nipple, which predispose to inflammations of the gland when any exciting cause presents. Of the malformations which may occur, that most frequently observed is a too flat or retracted surface of the nipple, associated with shortness of the excretory milk ducts. This malformation may be due to a congenital shortness of the milk ducts or from an early inflammatory process which has shortened and drawn the nipple inward, but undoubtedly the usual cause of too flat nipples is pressure. Statistics state the right breast to be the one most frequently affected by inflammation, and of the twenty-two cases of mastitis seen during the past year, my records confirm this, since of the first eight consecutive cases all were of the right breast, and of the remaining fourteen, seven were also of that side. It is difficult to assign any positive explanation for this, unless it be that in nursing the mother supports the child in such a way that less traction is made on the left nipple, and hence the muscular fibers of the cutis are subjected to less irritation and abrasions are not as likely to occur. The lesions of the nipple we describe as of three varieties: erosions, fissures of the apex, and fissures of the base. An erosion of the nipple is due to denuding of the epithelium from the constant flow of milk over its surface, and the maceration due to too long and frequent suckling, together with the irritation from the lips and tongue of the child. This is common during the first weeks of lactation, especially when the flow of milk is delayed and repeated efforts are made to nurse the child without success. The excoriation of the nipple is situated generally at the summit, but may be so large as to cover the whole nipple and give it the appearance of a strawberry. The fissures of the apex are simply an extension of the normal division between the papillæ, and the causes are the same as those which produce erosions. The fissures at the base are generally beneath the nipple and are most frequently seen in women whose nipples are long and bent down on the areola from the pressure of the corsets. From heat and moisture the skin becomes macerated. The importance of prophylaxis against these forms of sore nipples can not be overestimated, since the vast majority of all cases of mastitis can be assigned to lesions of the nipple, which afford an avenue of entrance for pyogenic organisms. The means employed for prophylaxis are the wearing of such clothing as will not cause from pressure the depression of the nipples. When this has occurred and when pregnancy exists, efforts should be made to draw out the nipple, at the same time employing some astringent lotion; cologne or alcohol suffices during the early months, but during the last month of pregnancy an alum solution is to be recommended. A further and most important agent of prophylaxis is absolute cleanliness in nursing, both for mother and child. In some of the foreign maternity hospitals a solution of bichloride is applied after nursing and the nipple carefully cleansed before the child is again put to the breast, the child's mouth being cleansed with a solution of borax or boric acid. Should the nipple be excoriated, measures should be immediately taken to protect it from maceration and friction by temporary suspension of nursing, or in some cases the use of a suitable nipple shield, together with the application of nitrate of silver or compound tincture of benzoin. My preference is to discontinue nursing for a time, and if the breast becomes engorged with milk, apply pressure and the use of a solution of nitrate of silver about the nipple. For fissures of the summit, the nipple shield with cauterization of the fissures with the stick of nitrate of silver. For fissures at the base the above means can be used, but it is of decided benefit to combine them with the use of a dry dressing with aristol or like powder about the nipple to prevent its coming in contact with the skin. Of the varieties of mastitis, that which occurs soon after birth—mastitis neonatorum—is deserving of attention, since its results as indicated above may have a marked effect on the formation of the nipple, causing it to be umbilicated. The parenchyma of the gland is here affected and the breasts appear swollen and tender, containing occasionally a milky substance; if no attempt is made, as is often the case by an overzealous nurse, to express the milk or massage the gland, the swelling will soon disappear spontaneously. If mechanical irritation has occurred, a mastitis or even an abscess is liable to result. If the breast shows evident signs of inflammation, then apply under pressure a dressing of acetate of aluminum consisting of alum, liquor plumbi subacetatis, and water, in the proportion of five, twenty-five, and five hundred, respectively, in hopes to abort any abscess, and if this fails and an abscess forms it must be incised, care being taken to make the incision away from the nipple. Mastitis occurring at puberty and in non-puerperal women is usually the result of some injury and is circumglandular. The indications for treatment here are the same as those just described. Endeavor to abort inflammation; failing in this, incise under antiseptic precautions. That each form and degree of mastitis should be differentiated is of much clinical importance, since the treatment indicated depends upon what parts of the gland are involved and how far the inflammatory process has advanced. Mastitis may occur as simple dilatation of a single milk duct from inspissated milk, giving a gross appearance of a hard and sensitive lump in any part of the parenchyma of the gland; from this, the most simple form, all grades of severity are observed, till the whole gland is occupied by a multilocular abscess, the contents of which are pus, inspissated milk, and broken-down connective tissue. The three main varieties are generally described according to the site of inflammation, when this has progressed to the formation of abscess.

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* Read before the Hospital Graduates' Club, June 19, 1892.

1. The supramammary abscess in the subcutaneous tissues about the gland.

2. When the parenchyma of the gland is affected. In the early stages this may involve either the glandular or interstitial connective tissues, but at the latter stages both these tissues are included as a nidus for pyogenic forces.

3. Submammary abscess, lying beneath the gland in the connective tissues attaching the breast to the pectoral muscle. In all these deeply-situated abscesses some direct communication exists with an acinus of the gland where the germs have established a septic process, which later involves the connective tissues. Besides the above-mentioned varieties of mastitis, mention should be made of lacteal engorgement, due to the complete or partial occlusion of one or more lactiferous ducts, with the result of inspissation of the milk. Although repeated experiments have been made to find special bacteria which could cause fermentation or curdling of the milk in a gland secreting normal milk, none have as yet been definitely discovered. Lacteal engorgement may occur in breasts where no external evidence of septic infection can be discovered, and in cases where the whole puerperal period has been marked by no symptom indicative of sepsis following labor. Reynolds states that the inspissation of milk might occur as the result of a local congestion of the secreting epithelium, caused by traumatism or even an exposure of the breast to a draught of cold air. Certainly, the distinction between simple lacteal engorgement and the forms of septic mastitis can be made by clinical symptoms, and should have a potent influence in distinguishing between the modes of treatment employed in the early stages. The ætiological factors of true mastitis are various, but the presence of one or more species of pyogenic organisms is essential. Cheyne holds that when the abscess is in the parenchyma of the gland the staphylococci are to be found, which begin the inflammatory process in the deeper part of the organ and spread toward the surface, and that their entrance into the gland is along the milk ducts; while in case of suppuration, which occurs in connection with the streptococci, the disease begins with a rapidly spreading redness of the skin, extending from some crack or fissure of the nipple, and the suppuration in the deeper parts follows this superficial affection, these organisms spreading along the lymphatics. Further means by which these organisms may establish suppuration are by superficial inoculation and by inunction from rubbing in oils, entrance being afforded by the ducts of sweat glands, orifices of sebaceous glands, hair follicles, and portions of the skin where the protecting epidermis has been scratched or destroyed. These organisms have been frequently found in the blood of patients suffering from septic fever, and in that form of sepsis designated as puerperal fever they are known to have been excreted in the milk when an entire absence of disease or ulceration of the nipple existed; hence they must have come from the uterine wound. Certain factors have long been recognized as predisposing to the action of the causes of inflammation, and among them cold is to be mentioned, because it makes a weak tissue, and therefore liable to an attack from organisms. Traumatism may also act as a predisposing cause by setting up the early stages of inflammation, dilatation of the vessels and congestion, and by leading to an effusion of the blood, thus allowing the cocci in the blood to escape into the tissues. Pyogenic cocci may exist outside of the body, having been cultivated from water which came in contact with decomposing beef and used in the kitchen for rinsing dishes; but the most frequent habitat outside the body is in the skin, especially where the surface is moist—as in the axilla, between the nates, and in the secretion from the pharynx and nasal mucus. This will suffice to illustrate some of the means which supply the causes of inflammation, and the avenues by which ready access is afforded to the tissues of the breast. As to the symptoms which each of the varieties of mastitis presents, too much stress can not be put upon them, as a full comprehension of them is essential for differential diagnosis and special treatment. Lacteal engorgement usually presents in the early stages as a circumscribed swelling, situated in one of the lobes apart from the nipple and areola, and entire absence of inflammatory changes of the skin and subcutaneous tissue, such as heat and redness. This localized lump is hard, and not especially painful. By reason of the tension and direct pressure produced from the occlusion of a single duct or acinus with inspissated milk, other lactiferous ducts become obliterated and a stasis occurs which may continue to encroach upon the successive portions of the lobe, or even each of the several lobes forming the entire gland, when a condition results commonly known as caked breast. This retention and engorgement of the mammary gland is frequently observed in all mammalia when, for any reason, the milk fails to be excreted. An instructive lesson as to treatment can be found in observing that lower in the grade of brute mammalia, where no efforts are made by man to apply means for alleviating this trouble, mastitis rarely follows. Hence we conclude that rest and non-interference are indicated in the treatment of this affection, and would strongly protest against the active massage and the use of the breast pump, so generally employed. When attempts are made to relieve this condition that the patient may be freed from the pain and discomfort caused by overdistention, then recourse must be had to the application of uniform and continuous pressure. This is obtained by one of the forms of breast binders, of which there have been many invented; that employed by the writer is known as the New York Maternity breast bandage. Its simplicity and easy application commend it, and certainly the results have been most satisfactory, as evinced by its use in the Sloane Maternity Hospital, where, in two thousand puerperal women, but a single case of caked breast has resulted in abscess, and this was undoubtedly septic when the patient was admitted, erosion of the nipple existing. Squire has suggested the dilatation of the lactiferous tube on the nipple, finding this by means of a magnifying glass, then evacuating the milk in the overdistended reservoir of the corresponding milk duct—a measure good in theory, but adding one more factor for direct septic infection. The results of the breast binder are not always to be seen in the first twenty-four or forty-eight

hours, as indicated by the decrease in the size of the breast; but when no evidence of sepsis is seen by inflammatory changes in the skin and the hard localized lump gives no appearance of change into an abscess, the pressure should be continued for several days, when drainage of the milk will have become established; and if the general condition of the patient is good, and this caking of the breast is during the early weeks of lactation, rest can be given a breast for a number of days without permanently stopping its return to functional activity. The symptoms of inflammation in the subcutaneous tissues about the mammæ, and especially those in or adjacent to the areola, are those associated with phlegmons in other situations affecting like tissues. They are seldom large, soon affecting the skin above, and rapidly passing into the formation of a localized abscess without giving rise to any marked constitutional symptoms. If seen very early, attempts should be made to abort or limit the inflammation by rendering the external parts aseptic, and application of cold or a wet antiseptic dressing. Should these fail and the formation of an abscess with fluctuation be accomplished, immediate incision should be made in such a manner as not to affect the nipple or pass through the connective tissue overlying the gland. The cavity should be thoroughly irrigated, best with bichloride solution, and the nursing stopped by the application of a dry sterilized dressing, put on under pressure, care being taken to protect with abundant padding the other breast, but leaving its nipple free. Here the usual three-inch roller bandage can be used to fulfill all indications. The inflammation of the glandular structure causing parenchymatous mastitis, the variety most frequently observed, occurs generally at the beginning or end of lactation. In this form we have marked constitutional symptoms of a distinctive septic character; an early chill followed by rise of temperature, with rapid pulse and abundant perspiration. The pain is often intense and the lymphatics connecting with the axillary glands soon show the evidence of inflammation and render the movement of the arm painful. The general contour of the gland is not, in the early stages, much changed, nor is it at any time of the disease when the septic process is limited to a single lobule. But more frequently several foci of inflammation exist, and though the process may have begun in a single duct or acinus, others soon follow and attacks are made upon both the interstitial and glandular tissues, constricting the lactiferous ducts; and large abscess cavities form from union with small pus collections. The walls of a mammary abscess are uneven with sinuous and rough excavations. The secretion of the milk is arrested in one after another of the affected lobules. When such a course has occurred the contour of the gland is changed, and is often considerably distorted by having a hard mass—the result of milk stasis—on one side, and a full, rounded, fluctuating tumor in the area where the abscess has formed. The nipple is frequently depressed by the traction on the muscular fibers of the milk ducts, and the skin presents various changes of color, from a glistening white, with distended blue veins, to a dusky brown. The effect on the general system from a mastitis is often most marked, and the patient passes rapidly into a cachectic condition, when the abscess has been allowed to open spontaneously or aided by the frequent custom of poultices, which predispose to milk fistulæ, long-continued suppuration, and deformity of the breast from the cicatricial contractions, in which carcinomatous disease may find a beginning. Prophylaxis, as before indicated, by care and surgical cleanliness of the nipple, can, with but few exceptions, prevent this unfortunate disease. When the entrance of pyogenic organisms has occurred, attention should be directed to limiting an increase in their number and restricting their action in affording a favorable nidus. By the complete discontinuance of nursing much can be accomplished in preventing further sources of infection from the child's mouth, or from any disease of the nipple, and by keeping the gland in a state of rest from functional activity, whether it be the affected gland or the sound one, for the latter, if used, has a marked tendency to continue the stimulus and conditions necessary for milk secretion. Efforts must always be made to abort any incipient inflammation, but these can not be successful in the vast majority of cases of mastitis if the usual means of poultices, ointments, liniments, and active massage are employed. All those who believe that inflammations are the result of organisms of a septic nature must base their therapeutic efforts upon strict antiseptic principles. Therefore, in our efforts to abort inflammation, let us render the field as aseptic as possible, and next employ those agents which experience has shown to be effective in limiting the course of septic infections. The affected breast should be scrubbed with soap and water, and special attention directed toward cleansing the nipple and areola; oil of turpentine is then used over the whole surface, this followed in like way by ether, and finally the gland is washed with corrosive-sublimate solution. In 1857 Foster employed sponges to give uniform and equal pressure to act as an emollient in softening the tissues; in the treatment of incipient mastitis, and after abscesses had formed and been incised, to aid in the absorption of discharge and bring the walls of the sinuses together. The use of large sponges, now thoroughly disinfected and sterilized, is still worthy of employment, and I know of no more effective agent in giving uniformity of pressure and affording an antiseptic dressing. A sponge large enough to cover the breast should be selected; this, being made aseptic, is applied, and, should it be desired, can be wet in an antiseptic solution; over this a quantity of sterilized gauze or absorbent cotton is added, the opposite breast and both axillæ being protected with like material. The breast bandage is now tightly pinned and allowed to remain in place twelve hours, when the dressings are removed and the breast examined to note whether the warfare waged by the microorganisms has been checked. If signs of inflammation have diminished, the dressings are again applied and left for twenty-four hours. In five cases of incipient mastitis so treated by the writer, four resolved within a week, and the infants again resumed nursing without further breast symptoms developing. In these cases a saline cathartic, given early, affords comfort in diminishing the temperature and lessens the hyperæmia of the breast.

There is but one method of treatment for purulent mastitis—viz., incision, with the employment of every antiseptic precaution.

The field of operation should be rendered aseptic in the manner described above.

Never attempt to incise an abscess of the breast without full surgical anæsthesia, as the pain must be intense if thorough explorations and opening up of the sinuous and uneven cavity is made. The primary incision should be made radially, to avoid, as far as possible, division of the lacteal ducts, and over the site where fluctuation is most marked.

The cavity of the abscess having been entered, insert the index finger to explore with greatest care the cavity to discover each recess; those leading toward the skin and the dependent parts of the breast should be given direct outlet, by incision of the superficial tissues over a dressing forceps introduced into the cavity and along the course of the sinus. Drainage-tubes of stout rubber should be passed into the cavity of the abscess, through the primary and counter incisions. Thorough irrigation with a hot mercuric solution should first be made; this will generally check all oozing and remove quantities of pus and necrotic tissue.

It is advised that the breast should now be firmly compressed to see whether all recesses have been completely emptied of pus. Should additional pus appear, this is evidence that some recess has been overlooked and further exploration is demanded. The irrigation with hot bichloride solution is now followed by the copious injection through each drainage-tube of a strong solution of peroxide of hydrogen. A sterilized sponge is then placed over the affected breast; sufficient antiseptic gauze is added to pad the axillæ and protect the opposite gland; these are held in place by a breast bandage firmly applied. This dressing is renewed at the end of twelve hours, and if the discharge has drained into the sponge, as is most likely, because of the free exit afforded, the pressure from the bandage, and the capillary attraction of the sponge, the drainage-tubes, excepting that placed in the most dependent opening, are no longer of service. Irrigation with peroxide of hydrogen is again employed, the sponges thoroughly disinfected in bichloride solution, or, better, a new sterilized one selected, and the bandage applied as before.

Absence of pain and temperature and the dressing continuing free from discharge permit its remaining unchanged for three or four days. By this time, unless there are shreds of necrosed tissue, which the peroxide of hydrogen has done much toward removing, the last drainage-tube is taken out and no further irrigation used; only the sponge and bandage reapplied, not to be removed for a week. The same treatment is indicated in retromammary abscess, except that, as it usually points near the lower margin of the gland, the incision should be made at that site. If this treatment is employed in cases of mammary abscess, the long-continued suppurating sinuses, with fistulæ, chronic interstitial mastitis, and marked deformity of the gland from extensive cicatrices, a starting-point of primary carcinoma, can be almost entirely eliminated from the sequelæ of this frequent disease.

19 West Forty-sixth Street.

INTUBATION FOR STENOSIS OF THE LARYNX IN A BOY TWELVE YEARS OLD.

*RETENTION OF TUBE FOR TEN WEEKS. TRACHEOTOMY. DEATH FROM GENERAL TUBERCULOSIS.**

By CHARLES H. KNIGHT, M.D.

The question of intubation *versus* tracheotomy in chronic stenosis of the larynx is still unsettled. The history of the following case is interesting in many particulars, and may be of value as a contribution toward its solution.

The early notes were taken by the house staff of Bellevue Hospital, to whom I am indebted for many courtesies:

The patient, a boy twelve years of age, was admitted to the hospital on October 14, 1891. According to the statement of his physician, who brought him, he had been ill for a week or more with dyspnœa, aphonia, cough, and fever, his temperature reaching on one occasion 104°. No family history was obtainable, but it may be assumed that bad hygiene and poor diet were important elements in the ætiology of his disease. At the time of his admission the boy was fairly well nourished. He could not speak above a whisper and his breathing was quite noisy and labored. He had some cough, with very moderate frothy expectoration. The temperature was slightly elevated and the pulse rather more rapid than normal. There was no complaint of pain. On physical examination, sibilant and sonorous râles were heard over both lungs, and the expiratory murmur was somewhat prolonged. The percussion note was normal. All the other viscera seemed to be healthy. It does not appear that the larynx was examined with the laryngoscope or that a microscopic examination of the sputa was made. For a time there was some improvement under treatment, but the breathing continued difficult and the voice was not regained. A marked feature of the dyspnœa throughout was that it became decidedly more aggravated at night, so that the boy would frequently start up from sleep gasping for breath. These nocturnal attacks were relieved by inhalations of oxygen. The treatment otherwise was mainly supportive, combined with the occasional use of cough mixtures, antispasmodics, medicated steam inhalations, etc. For three or four weeks the condition of the patient fluctuated, sometimes better and again worse, but on the whole it decidedly failed up to the time when I first saw him, on November 8th, by the kindness of Dr. W. B. James. On the day previous Dr. James thought he discovered with the mirror a neoplasm beneath the vocal bands. On examination of the larynx there was found to be general hyperæmia of the mucous membrane. The arytænoids were normal, except that the right aryepiglottic fold seemed slightly thickened. The vocal bands were red and did not approximate on phonation. Beneath the cords, extending along their entire length and invading the anterior commissure, was a mass of tissue paler in color than normal mucous membrane, having an uneven and at certain points an almost papillated surface. No ulcerations or erosions could be discovered. The air passage was converted into an irregular slit so narrow as to appear utterly inadequate for respiration. Pulse 120, respiration 32, temperature 102°. On November 9th, the patient having passed an unusually bad night, an O'Dwyer tube intended for a child of four was introduced. At first it excited a good deal of irritation and cough, which subsided shortly after withdrawal of the string. Stenosis was at once relieved; the respirations became quiet and were reduced to eighteen per minute. The child passed a peaceful night for the first time in many weeks. The tube was coughed out in about twenty-four hours, but for three or four days there were no indications of return of dypnœa. Careful physical exploration at this time discovered no sign of pulmonary disease. In the mean time an attempt was made to remove a piece of the growth with the Mackenzie forceps, but the patient was so nervous and intolerant that it was impossible to get a large enough fragment for satisfactory microscopical examination. My first impression of the lesion was that it was tubercular, but the absence of pulmonary signs and the marked change for the better in general condition after intubation tended to indicate simple subglottic papilloma. It was finally decided to reinsert the tube in the hope of dissipating the neoplasm by pressure. Accordingly a tube of the next size larger was selected, and it was worn with perfect comfort for twelve days. The patient still continued to improve and the lungs remained free. The tube was then removed with the extractor under cocaine. A satisfactory view of the larynx was impossible and the tube was therefore not at once replaced, in the hope that the irritation might subside so as to permit an examination. On the contrary, however, toward night the dyspnœa began to return and after midnight became so urgent that oxygen inhalations were resorted to and the advisability of tracheotomy was considered. The following day was passed in tolerable comfort, but toward evening (November 25th) breathing again became labored, and a tube was for the third time introduced. The largest sized child's tube in the O'Dwyer case was passed with ease and without cocaine, and gave the usual relief. This tube was worn until February 3d, a period of *ten weeks*. It was then removed with the extractor, as it appeared to be getting imbedded in œdematous swelling of the arytænoids and ventricular bands. Through all this time the patient made steady progress, gained in flesh and strength, and made no complaint of the tube. On withdrawal of the tube the secretions were slightly tinged with blood. A hasty laryngoscopic examination showed reddening and erosion of the vocal bands and granulations projecting into the lumen of the larynx from its posterior wall. The subcordal growth seemed to have been effaced. At any rate it had been so compressed that it no longer projected beyond the free margin of the cords. The subsequent history of the case may be briefly told. For several days the boy continued very comfortable. Obstructive symptoms then gradually returned and it was decided to transfer him to the surgical division for tracheotomy, thyreotomy, and radical extirpation of the neoplasm, the idea still being that it was a purely local affair. The trachea was opened by Dr. Markoe on March 16th, six weeks after removal of the intubation tube. From this time the patient steadily failed, and about seven weeks later he died of general tuberculosis.

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* Read before the American Laryngological Association at its fourteenth annual congress.

The following description of the larynx and of the microscopical appearances has been kindly furnished by Dr. John S. Ely:

The larynx is of normal size. An opening through the first and second tracheal rings anteriorly represents the situation of the tracheotomy tube.

On opening the larynx, its mucous membrane is found to be everywhere much swollen and ulcerated. The epiglottis is thick and irregular in shape as the result of ulceration. The superior or false vocal cords are likewise much thickened, unduly overhanging the true cords, and materially encroaching upon the ventricles. In places the edges of the true vocal cords appear to be quite sharply defined and rather less affected than any other portion of the mucous membrane. But the tissue immediately below them is greatly thickened, causing decided stenosis. Here the ulceration of the mucous membrane is most marked, and in places small flakes of necrotic tissue appear to be about to separate.

Microscopical examination of a portion of one of the false vocal cords and the adjacent tissue discloses the characteristic features of tubercular inflammation. In places the tissue is denuded of epithelium, exposing a poorly nourished tissue, consisting of a loose reticulum, in the meshes of which are many small spheroidal cells, epithelioid cells, and giant cells. This tissue is widely distributed and is encroaching upon the normal tissue of the larynx. In places it is diffuse in nature, in others it is more or less concentrically arranged, presenting the appearance of the miliary tubercle. Scattered through this tissue and on the ulcerated surfaces are small areas of finely granular or cheesy material, the result of coagulation necrosis

Sections stained by the Ziehl-Neelsen method demonstrate the presence of tubercle bacilli in large numbers, more particularly in and near the necrotic areas above referred to.

The points of special interest to which I would draw attention are (1) the simplicity of intubation as compared with tracheotomy, and the ease with which the tube was extracted with the aid of cocaine and under the guidance of the mirror; (2) the slight amount of disturbance excited by the tube and the absence of objection to its prolonged retention. The patient took both fluid and solid food without difficulty on the second day after intubation, and the tube remained *in situ* for ten weeks. Meantime all unfavorable symptoms disappeared, the boy steadily gained in weight, and improved in general condition.

Finally, the question suggests itself, Was this a case of primary laryngeal tuberculosis? It is true that certain pulmonary signs of a suspicious character were recorded, but it must be admitted that their definite import was seriously masked by the presence of laryngeal stridor, and it is very sure that no sign whatever of pulmonary disease could be detected after the patient began to breathe quietly through the intubation tube. The contrast in the deportment of the patient after intubation and after tracheotomy was very striking. During the former period his improvement was without interruption; while wearing the trachea tube he steadily declined until a fatal termination was reached. It may be unfair to institute a comparison between the two procedures in this particular case, since in the gradual evolution of the general tuberculosis the boy's condition must have been less favorable when his trachea was opened than it was when the intubation tube was introduced. At the same time, it is impossible to divest one's self of the belief that he was far more comfortable with the laryngeal than with the tracheal tube. The objection to the former—that it interferes with phonation—did not hold in this case, because the voice was already abolished. The advantage of avoiding the annoyance and irritation of a tracheal wound, and more especially of conveying to the lungs in cases of this kind a supply of fresh air through the natural passages, can not be estimated. I believe there is a field for intubation in similar cases, and that it offers substantial advantages over other methods in that rare condition of obstruction of the glottis by tubercular infiltration.

[Since the foregoing paper was read, sections from the region of the stenosis and from the upper portion of the trachea have been kindly examined by Dr. Ely, who reports as follows: The submucous tissue over the cricoid cartilage is much increased in thickness in consequence of the development of a rather loose new tissue, rich in spindle-shaped and irregular cells, and fine fibers irregularly disposed in a more or less fine reticulum. More superficially (toward the lumen of the larynx) this tissue becomes somewhat richer in small spheroidal cells and shows a tendency to concentric arrangement around small cheesy areas. This latter tissue forms the floor of the laryngeal ulcerations. The thickening of the mucous membrane at the point of stenosis appears to be due to the development of tubercular tissue differing in no respect from similar tissue always found in the immediate neighborhood of tubercular ulcerations of other mucous membranes, and which is a pronounced feature of the elevated edges of tubercular ulcers of the skin.]

20 WEST THIRTY-FIRST STREET.

THE DEMANDS FOR STERILIZATION.*

BY FRANK J. THORNBURY, M. D.,
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WATER from the interior of the earth, such as that obtained by artesian wells, is entirely free from germs, but water which stands or flows over the bacteria-enriched ground contaminated through decomposed organic material contains myriads of living organisms.

The numbers of bacteria present fluctuate between the few to the cubic centimetre contained in ordinary well and spring water to the millions to the cubic centimetre found in river and canal water.

For a long time it has been the popular belief that water might be the source of various forms of infection, and with our present understanding of intestinal mycosis we know that not only cholera and typhoid but many other serious alimentary diseases are directly traceable to this source.

It is true that the water bacilli are for the most part those which do not belong to the germs of wound infection, although some most virulent varieties of bacteria have repeatedly been found in water.

It is only necessary to recall the fact that the most disastrous of the animal septicæmias—namely, the *rabbit* septicæmia bacillus discovered by Koch and Gaffgy—was first found in a tributary of the Spree River, flowing through Berlin.

Rinantro Mori has isolated from canal water three pathogenic bacteria. According to Lortet and Despeignes, the Rhone River water of Lyons contains scarcely anything excepting organisms which are pathogenic. The filter residue and precipitate injected subcutaneously into guinea-pigs caused a rapidly fatal septicæmia and pyæmia. Repeatedly the presence of pyogenic staphylococci has been detected in the examination of river and well water. With a knowledge of the virulent characteristics of these bacteria such water would be drank with much hesitation.

The hydrant water of Freiburg, Germany, frequently contains the green pus *Bacillus pyogenes.* Most bacteria can maintain their vitality for weeks and even months in water. The water serves as a culture medium for many; they thrive and multiply in it by spontaneous proliferation.

The bacteriological tests of Cramer showed that Zurich hydrant water increased twenty-seven thousand times in its septic contents after standing for twenty-four hours. And Leon ascertained that the supply water of Munich, which contained only five bacteria to the cubic centimetre, after standing for five days showed five hundred thousand germs to the cubic centimetre.

Certain of the saprophytic bacteria grow best in water, and they here come to a luxuriant development. According to Wolffhugel and Ridel, sterilized river water mixed with distilled water is a favorable nutrient medium for anthrax, and Gioxa has shown that this is true of other pathogenic bacteria which are of interest to us aside from anthrax.

Reference to the chart prepared by Houlwa giving results of his investigations into the water supply of the city of Breslau is quite sufficient to convince us of the multiplicity of forms of animal life found in water.

It is conclusively demonstrated that water may be a source of danger from hygienic and bacteriological standpoints. It seems positively unjustifiable to permit its application to wounds without first subjecting it to a thorough sterilization.

While we can hardly as yet sterilize the entire water supply of a city, demonstrated facts in hygiene demand that we sterilize the water used about operations—*i. e.*, in cleansing the hands of the operator, the field of operation, the instruments, and the utensils.

Precipitation by the addition of some finely powdered and insoluble substance, filtration by use of sand or the Pasteur-Chamberlain filter, then destroying the germs by the addition of antiseptics, and finally sterilization by heat, are the various means of rendering water fit for surgical use.

When water is allowed to stand for a time, of course the bacteria settle to the bottom in accordance with the laws of gravity. The precipitation may be further facilitated by the addition of sand, calcium carbonate, or certain other finely granular substances. Regarding filtration, by reason of the fact that water in the interior of the earth is free from bacteria, it has been thought that we might imitate Nature in so far as to be able to extract from hydrant water its germs and impurities by a process of filtration; but such a degree of perfection we have, unfortunately, as yet not been able to attain.

The Pasteur-Chamberlain filter, while valuable and capable of markedly improving the quality of the water, does not render it absolutely free from bacteria. Perhaps for the first four or five days there are no germs present and it functionates fairly well; but after this time the quantity of water which the filter will allow to pass gradually diminishes, the pores become partially occluded, and finally germs filter through.

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* Read before the Buffalo Academy of Medicine, October 4, 1892.

The antisepticizing of water by the addition of chemical substances merits just a few explanatory statements for the correction of certain erroneous ideas which I believe to exist.

Bichloride of mercury does not insure immediate death of everything in the way of germs, as ordinarily supposed. *Staphylococcus pyogenes* and *Bacillus pyocyaneus* live for a quarter of an hour in a one-per-cent. solution. Anthrax spores resist a one-per-cent. solution for twenty-four hours. Boric acid, ammonia, and absolute alcohol have little influence upon them. They survive a five-per-cent. carbolic solution for days. Tetanus, tubercle, and spores of other pathogenic bacilli present similar degrees of resistance.

Clear spring water, in which the individual bacilli are suspended isolated, may be disinfected, but the highly contaminated water of rivers and ponds, containing gross visible masses of impurity rich in bacteria, does not admit of being rendered sterile by the addition of antiseptics. Heat is the only absolute agent—simple in its application, most rational and reliable. The spores of anthrax, the most resistant pathogenic spores known to us, are completely destroyed by boiling in water for three minutes. Five minutes of boiling them must remove every reasonable possibility of any germs remaining alive.

Miquel found that of one thousand bacteria in water, 95·5 per cent. were destroyed by short boiling. Water of the river Rhone, which contained thirty-three thousand bacteria to the litre as revealed by the investigations of Lortet, lost through boiling all but nine hundred and forty-one bacteria, or over ninety-seven per cent. Bacteria which resist boiling water are only such as possibly the hay bacillus—*i. e.*, non-pathogenic, and consequently unimportant.

The absolute certainty of heat sterilization and its readiness of application strongly makes it desirable that every surgeon shall provide a sufficient quantity of sterilized water for use in his operating room or clinic. And as there are bacteria that thrive and multiply in water, it is necessary that after boiling it be closed hermetically, or, preferably, boiled fresh each time it is needed.

Sterilizing in bottles is only adapted to limited use; for hospitals and clinics and general operative purposes a special apparatus is necessary.

The relation of cause to effect existing between the occasional occurrence of abscesses in association with hypodermic injections has been recognized since an early period in the use of the hypodermic syringe.

We have the one instance in which four consecutive tabes patients were inoculated with erysipelas and three of them died. Two typhoid patients in a state of collapse developed rapidly fatal purulent œdema following injection of tincture of musk. Two cases of fatal phlegmon resulted from the subcutaneous administration of quinine (Leyden's clinic, Charité, Berlin).

The inoculation of anthrax in the injection of a solution of arsenic has been observed in the Breslau clinic of dermatology. Two cases of tuberculosis are lately recorded, one by König and the other by Eiselsberg.

There has been in general too little attention given to the liability of the presence of organisms in injected fluids. Schimmelbusch and Hohl have shown that the hypodermic solutions obtained from various apothecaries' shops in Berlin contain vast numbers of live bacteria. The germs present in a one-per-cent. pilocarpine hydrochloride solution were innumerable. In an ordinary solution of ergotine there were ten thousand bacteria to the cubic centimetre. Solutions of atropine, morphine, and cocaine hydrochloride also were rich in organisms.

It is quite important that we should recognize that the pus-formers—the Fehleisen erysipelas streptococcus and other pathogenic organisms—multiply in the fluids which we are injecting into the body.

Ferrari has recently shown that in one-per-cent. solutions of morphine and atropine the organisms not only *live* for weeks, but indeed *increase* with marvelous rapidity and form pure cultures in the fluid.

In glycerin the *Staphylococcus pyogenes aureus* remains alive and active for six days, then gradually dies. In two-per-cent. morphine solutions it retains its vitality for twenty-four hours; in ten-per-cent. cocaine solutions for two hours. Only in the stronger solutions—such as those of ether, musk, quinine bisulphate, fifty-per-cent. antipyrine, and twenty-per-cent. caffeine benzoate—does it die at once. In 0·15 to 30·0 per cent. strychnine sulphate bacteria live for eight days. In one-per-cent. hydrochloride of cocaine, after nine days, thousands were still alive.

That the subject of the bacterial contamination of hypodermic solutions and the consequent danger of subcutaneous medication merits some attention, therefore, must be conceded.

Not only should we sterilize prepared hypodermic solutions and use sterilized water in dissolving morphine and other tablets, but the syringe and needle also should be sterilized.

Five minutes' submersion in boiling water suffices to render the instrument aseptic. The fluid may be heated in a test-tube over the gas or lamp flame.

The mechanical cleansing, which should constitute the preparatory part of every sterilizing procedure, for removal of the grosser contamination—such as dried blood, pus, and masses of fat—does not, of course, insure an absolute asepsis.

The instruments will often still be found to contain many varied forms of micro-organisms strewn promiscuously over their surface.

For the removal of this final but important source of error the impracticability of the successful use of carbolic, boric, or salicylic acid solutions, or even bichloride of mercury, by pouring one of the latter over the instruments for a few minutes, is proved by the foregoing references and demonstrated facts.

The instruments must be sterilized, and the choice of method lies between hot air, steam, and boiling solutions. Only the latter of these shall I consider. Spores of many bacilli resist hot air at 140° for two hours and steam for forty minutes to an hour, while *boiling in soda insures absolute death of even anthrax spores in from three to five minutes.*

Catheters, sounds, and bougies also merit some attention, since it has been proved that most cases of severe cystitis are due to the introduction of germs into the bladder by unclean instruments. The urine in the healthy bladder is normally free from bacteria, and decomposition does not occur without external cause. There are few practitioners who have not observed the development of cystitis after a single urethral exploration or repeated catheterism. Rosving has found frequently staphylococci and streptococci identical with known pathogenic species in ætiological association with vesical inflammations. In thirteen cases out of twenty of purulent cystitis, the younger Schnitzler was able to trace the cause to a certain bacterium, which he names *Urobacillus pyogenes septicus*. By the introduction of his *Urobacillus pyogenes septicus* into the healthy bladder of animals, Schnitzler was able to produce the most virulent cystitis.

It is not sufficient for disinfection to simply dip the sounds, catheters, and bougies into antiseptic solutions or lubricating oils. Many of these combinations themselves contain live bacteria.

Koch long since demonstrated that antiseptic oils were, to say the least, ineffectual. In the first place, the chemical substance does not dissolve thoroughly in the oil. Secondly, the oil does not permeate the septic material. Silk threads, impregnated with pus and then dipped into oil, may be submerged in a 1-to-200 corrosive-sublimate solution for days and weeks without injuring the bacteria.

Analogous instances are found in attempts at destroying the bacteria imbedded in the sebaceous secretions of the skin and in the fat of the skin and of lubricated catheters.

Thus we see the absurdity of simply washing the hands superficially or rinsing them in bichloride, and also the uncertainty of attempts at sterilizing catheters by simply dipping them in carbolized or other "antiseptic" oil. The same also applies to the preparation of catgut by the popular method of "carbolizing" it. The oil itself is not reliably sterilized by the addition of chemical substances, as shown in the foregoing statements. The same is true of water-antiseptic solutions.

Sounds, of course, admit of being sterilized in heat, the same as other metal instruments; so also do Albarran's caoutchouc catheters. The soft-gum and lac catheters do not tolerate boiling, however; consequently they may be continuously submerged in strong carbolic-acid or corrosive-sublimate solutions—our next best substitutes—although each time before being introduced they should be rubbed with sterile gauze, or washed in sterilized water, to remove the antiseptic, which is very irritating to the urethral canal. The rubbing in itself is an efficient mechanical aseptic, as shown by Schimmelbusch, who infected red lac catheters with pure cultures of various bacteria, and found that, after a minute of active rubbing with moist, then dry, sterile gauze, the instruments were completely sterilized. We have the two associated factors of friction and heat as explanatory.

Regarding the cleansing of the hands, above incidentally referred to, they, of course not being sterilizable, should be treated with soap and brush, ether, alcohol, or corrosive sublimate, using sterilized water. But the brushes themselves must be kept clean, otherwise they may be a source of danger. Used in removing blood, pus, surface epithelium, and all forms of contamination, they become more or less contaminated themselves; being moist, they retain most of the albuminous matter, and form a most excellent nidus for germs.

Schimmelbusch and Spielhagen, in repeated examinations of the nail-brushes in clinics, dissecting-rooms, and laboratories, found in them inestimable myriads of bacteria.

That the brushes, therefore, merit some attention must be conceded. In the von Bergmann clinic they are dealt with in the following manner: Before being used they are first sterilized in steam for thirty minutes; second, they are kept continually submerged in a half-per-cent. corrosive sublimate; third, after a special contamination they are placed in very hot and finally in *boiling* water.

In every commode there should be a receptacle in which the brush can be kept submerged in the bichloride. The latter will maintain asepsis after the brush has been sterilized by boiling.

Sponges are proverbially a source of danger, and twenty per cent. of those prepared for use in Billroth's clinic were found by Frisch to contain bacteria. Absorbing so freely into their intricate capillary network blood, pus, and all fluids, contaminated or not, they are, *a priori*, apt to retain and convey infection and permit only with difficulty of being sterilized. Anthrax spores are found in sponges after being fourteen days submerged in carbolic acid. The ordinary organisms live for eight days.

But it is difficult to dispense with sponges entirely, especially in operations about the mouth, resections of the jaw, etc., and laparotomies. And they may be sterilized if heat is employed.

The method practiced by Schimmelbusch consists in first washing them thoroughly in hot water, removing carefully all foreign matter. After several rinsings they are boiled for thirty minutes in a one-per-cent. soda solution, then preserved in strong corrosive-sublimate solution. This method may be regarded as absolute. Sponges impregnated with pus and anthrax spores did not react to culture efforts after ten minutes in the boiling soda.

Since it has been shown that raw catgut is rich in bacteria, and Volkmann has had two cases of anthrax develop in a wound sutured with ligature from the sheep, in which animal anthrax is common; further, by reason of Koch's having demonstrated that antiseptic oils are ineffectual, as above shown—we are required to put catgut and other suture materials also through a course of sterilization. Steam for the silk is best, and Schimmelbusch's spool boxes, in which the ends of the threads protrude from the side, may be used. For preparing the catgut, von Bergmann's method is best: First, the bottle is sterilized for three quarters of an hour in steam; second, there is a process of deoleation by placing the catgut for twenty-four hours in ether; third, there is a submersion in alcohol and corrosive sublimate of the following proportions: bichloride, 10·0; absolute alcohol, 800·0; aq. destillata, 280·0.

The subject of drainage-tubes merits a passing notice. The necessity of their being sterile requires no argument. The glass and rubber tubes may be boiled in soda or sterilized in steam. Five minutes of the former, fifteen or twenty of the latter, is sufficient to render them reliably aseptic.

All of the articles and materials used in the disinfection of the surfaces, cutaneous and mucous, must of course themselves be aseptic. The alcohol, ether, and turpentine oil are kept free from bacteria only by careful handling.

Eiselsberg showed in 1878 that soap was richly impregnated with micro-organisms, and only that which had been boiled in the process of its manufacture should be used.

Last, but none the less important, we have the dressings to speak of.

Sterility as a prerequisite is absolute, and this applies to everything that is to come in contact with pure, fresh wounds. Both Schlange and Löffler have found gauze bandages, etc.—factory supplies—to contain many germs. The necessity of sterilizing the dressings then follows as a natural consequence. Saturating them with antiseptics is ineffectual. We now know that the action of most chemical solutions must continue for a long time, often for days, before certain resistant spores are destroyed, and the effect may at best be entirely nil when there are present the more or less impermeable layers of fat and albuminous substances in which the bacteria are often imbedded.

Even though it be conceded that the gauze and other materials have been sterilized by the transitory and more or less imperfect saturation with some of the popular antiseptics—carbolic acid, boric acid, or corrosive-sublimate solutions—as the work is done in the manufactory, they would be afforded innumerable opportunities for reinfection in the subsequent handling by three or four different persons, in cutting, folding, and packing the dressings for shipment, and the reverse of this process after they had reached the surgeon. Further, it is not with bouillon or water that we have to deal in a wound, but rather with albuminous culture material, which decidedly limits the action of chemicals. Combinations form, reducing the effectual working of the carbolic acid, corrosive sublimate, and other agents, and more or less evaporation occurs. In sublimated gauze, after a time only an insignificant trace of the original antiseptic is to be found. In solution also the bichloride is changed by the alkaline earths of ordinary water, although the combinations may to some extent be obviated by the addition of an equal quantity of chloride of sodium.

Thus we see the unreliability of antiseptic asepsis in dressings, and the inconsistency of relying on factory-prepared supplies.

Asepsis permanent and reliable, implying the avoidance of uncertainties and these various subsequent liabilities to contamination, may be accomplished in a simple manner by sterilizing the dressings by heat applied especially in the form of steam. Not only by reason of convenience and greater reliability in the absolute destruction of all pathogenic organisms does the steam sterilization recommend itself over the impregnation with antiseptic agents, but further in that at any time, on short notice and in but a few minutes, the work can be executed. A secondary handling of the dressings is also obviated; they are preserved in closed boxes, in which they remain until applied directly to the wound—*i. e.*, they are made ready for use before being put into the sterilizer. The bandages are rolled, the cotton is cut into strips, and the gauze is divided into such lengths as may be desired. The whole is then put into the small box receptacles and sterilized with lid and bottom orifices open; afterward they are dried and tightly closed. The dressings are then protected from every source of contact and contamination and there is no further handling of them until they are applied directly to the wound.

This principle of closed boxes for dressings is especially important and is infinitely more reliable than the storing of dressing in drawers, closets, or other less cleanly places (Schimmelbusch).

With reference to the heat sterilization of the metal instruments, I wish to lay special stress upon the use of the boiling soda solution. First introduced into practice by Davidsohn in a contribution from the Koch laboratory about two years and a half ago, it has gradually gained ground until it has attained the present distinction of being our most valuable and powerful disinfecting agent. Other alkalies had been added to the boiling water to supplement its sterilizing action, such as chalk, chloride of sodium, and caustic soda, but none of these have been found to possess the saponifying and permeating value of the washing soda. Its use in household practice for dissolving away dirt and for cleansing purposes generally is the most forcible argument in its behalf. Simple boiling water is in itself decidedly superior to either hot air or steam, as it destroys in five minutes the most resistant micro-organisms. But the instruments rust if boiled simply in water, especially if the water is cold when they are put into it, while by the use of soda, with the additional precautions of rubbing and drying the instruments, the rusting may be avoided. The sterilizing action of the boiling water is further intensified by the dissolving action of the soda. "We may say the boiling soda solution forms the most powerful disinfecting agent known to us, the use of which is applicable in practice. Silk and heavy wool threads impregnated with pus and pure cultures of the *Staphylococcus pyogenes* and *Bacillus pyocyaneus* are invariably destroyed in two to three seconds, and anthrax spores in two minutes, by submersion in the boiling soda solution" (Schimmelbusch).

The imperative necessity of sterilizing practically every article of the surgeon's paraphernalia being now understood, the demand for a single apparatus in which all the work can be accomplished naturally suggests itself. This indication I hope to have fully met in the combination sterilizer which I have the pleasure to present with illustration in this issue of the *Journal* (see New Inventions). Apparatuses have been devised for sterilizing water, there is a useful apparatus for instruments, and others have been devised for sterilizing dressings, but a combination apparatus in which all these three purposes can be accomplished in one has not as yet, to my knowledge, been invented. The necessity for such an apparatus seems to be very positive, as most practitioners can not well have three sterilizers—one for water, another for instruments, and another for dressings. If all these requirements could be combined in one apparatus, however, made of proper proportions and inexpensive, it would naturally come within reach of a greater number of those requiring a sterilizer. The number who do require a sterilizer corresponds with the number who make any pretensions to doing surgical work.

My special aim in the designing and execution of this apparatus * has been to bring it within reach of the general practitioner; its construction and use are simple and it may be arranged for working in almost any office. Where gas is not used the alcohol lamp may be employed for heating, but the supply bottle should be placed to one side and the wicking conducted through a tube to supply the flame underneath the boiler; thus the danger of an explosion by the boiling point of the alcohol becoming reached is obviated.

A CASE OF INTERMITTENT NEPHRYDROSIS.

By JOHN ROGERS, M. D.,
HOUSE SURGEON, NEW YORK HOSPITAL.

There has recently been recognized a group of cases closely resembling in clinical symptoms renal calculus which on the operating table yield no stone, yet the subsequent history has proved that the operation was entirely successful in the practical result aimed at—namely, relief of pain.

In some of these cases the pelvis of the kidney has been actually opened, and by digital examination no doubt left of the absence of stone. But the simple fact that a case remains cured after nephrotomy alone might be considered fairly positive proof of the absence of such body or bodies, and, furthermore, very suggestive of the pathological condition. This, in the great majority of instances, as demonstrated by Terrier and Baudouin, in the *Revue de chirurgie* (1891), consists, in brief, of a kink or twist produced in the ureter by the displacement of an abnormally movable kidney. There is an occlusion of the lumen of the ureter at some point of its course producing, for the time being, distention and pain, only relieved by straightening the tube, presumably by the kidney resuming its proper position. The following is a case so perfectly typifying this condition, which has been designated intermittent hydronephrosis, that it will bear careful perusal:

Rose F., aged eighteen, single, Russian, was admitted to the hospital on August 6, 1892, in fair general condition. For the past three years she had suffered from severe attacks of pain in the right hypochondriac and lumbar regions.

These attacks occurred at irregular intervals, varying from two to six weeks, and lasted several days.

She had often vomited at these times but had never been jaundiced, nor felt feverish or chilly, except that she was habitually constipated. She had never noticed anything unusual about the fæces or urine.

Physical examination revealed a tumor on the right side, about five inches in diameter, just below the free border of the ribs, smooth in outline and of apparently two lobules. The area over the tumor was flat on percussion, while between it and the area of liver dullness was a sulcus the percussion note of which bordered on tympanitic.

With the patient in the erect posture the lower third of the tumor sank below the iliac crest, and there was a correspondingly increased interval between its upper border and the margin of the ribs.

It could be displaced inward between one and two inches, and on bimanual palpation it appeared fluid and was tender.

The patient remarked that during the painful attacks her side was more tender and also visibly larger, but whether, following the attacks, there was an increased flow of urine or whether it was ever bloody she had not noticed.

She had just recovered from a particularly severe seizure when she was admitted to the hospital, and microscopical examination of the urine in this stage of intermission revealed absolutely nothing abnormal.

Dr. L. A. Stimson, under whose care she came, diagnosticated the case as one of intermittent nephrydrosis, basing the diagnosis on the mobility of the tumor, the patient's account of its enlargement coincident with the pain, and the absence of blood and pus in the urine during the days she was kept under observation before operation.

Under ether anæsthesia an incision was made from the last rib to the crest of the ilium, at the outer border of the right quadratus lumborum.

At first no kidney could be found; but, by working inward with great care on the anterior aspect of the quadratus, assisted by one hand externally on the abdominal wall raising up the prolapsed mass, the perinephric fat was reached and the kidney exposed.

By passing a silk suture through its substance it was raised up into the wound, and the second lobule, so plainly made out on bimanual palpation, was then found to be the largely dilated pelvis.

From this an aspirating needle drew a clear, straw-colored fluid, found, on subsequent examination, to be normal urine.

At this stage of the proceedings the silk suture tore out, and, while the kidney was held in place by pressure externally, the rent was enlarged by a scalpel till a gush of clear urine showed that the pelvis had been reached.

Careful digital examination could detect no stone.

Three catgut sutures were then passed through the substance of the kidney and the deep muscles of the back to retain the organ in its position. Iodoform gauze was packed into the wounded cortex. The bleeding from this, by the way, was slight and easily controlled by pressure. Another strip of gauze was run down to the point of exploratory puncture on the posterior surface of the pelvis, as a few drops of urine had oozed out, and the external incision partially closed and dressed antiseptically. On the second day the dressings became soaked with bloody urine and were changed. But the packing was not touched till the fourth day. After this it was gradually removed, a portion being withdrawn on each succeeding day till none remained after the seventh. It is interesting to note that no urinary fistula resulted, no urine being detected in the dressings after the sixth day.

The temperature reached 100° F. only on the two days succeeding operation, and during the first four days the urine—measuring twenty, forty-four, forty-one, and forty-five ounces for each twenty-four hours—showed a constantly decreasing amount of red blood-cells.

At the first change of the dressings on the second day it was found that the tumor so easily made out on admission had disappeared, and no recurrence was afterward made out. The convalescence was uninterrupted, and the patient was discharged from the hospital, thirty-seven days after operation, entirely cured. And at this date, three months later, she has had no return of her trouble.

This case is slightly atypical in one particular—that is, the presence of a painless tumor in the lumbar region.

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* Obtainable from Jeffrey & Gotshall, Buffalo, N. Y.

At the time of operation it proved to be the distended pelvis, and, as it subsequently disappeared, it can be inferred that the distention was maintained by some abnormity in the course of the ureter due to the position of the kidney. Bringing the kidney close to the abdominal wall and holding it there, overcame the trouble. More frequently these cases present a very close similarity to calculus. If in the painful attacks only there is an appreciable tumor, the diagnosis is so much the more clear.

Coupled with the absence of hæmaturia and pyuria, as in this case, it might be called certain. The recognition of the disease intermittent nephrydrosis is very important for prognosis. In a doubtful case where exploration by needle puncture can detect no stone, simple nephrorrhaphy could be practiced with great hope of permanent cure.

Nephrotomy and digital exploration of the pelvis always carries with it the risk of urinary fistula. When no calculus is found, the surgeon is apt to think he had done something he wished he had not.

Nephrorrhaphy yields such excellent results in just these doubtful cases that it should be considered before opening the kidney itself. If it fails, then there is time to make a thorough exploration for the calculus, which experience has shown may be very difficult to find.

THE TREATMENT OF SEROUS AND PURULENT EFFUSIONS INTO THE PLEURAL CAVITY.*

By J. P. CRAWFORD, M. D.,
DAVENPORT, IOWA.

It is not my purpose in this brief paper to more than report a number of cases coming under my management and mention the treatment carried out. We are all familiar to some extent with the processes leading up to the production of effusions into the pleural cavity. It is difficult to anticipate this complication, but very necessary to recognize it early and manage the situation judiciously.

Case I.—G. A., male, aged seventeen, came to my office complaining of having had a long siege of pain in the right side and difficult breathing, but not sick enough to take to bed. Examination revealed the presence of effusion in the right pleural sac crowding the lung. The hypodermic needle passed between the ribs withdrew serous fluid. A quart of this exudate was removed by aspiration, resulting in pleasant relief and uninterrupted recovery and for years he has been healthy.

Case II.—Male, aged fifty-six, had a tuberculous history, and for some months had been an invalid. He was suddenly seized with dyspnœa and serious cardiac disturbances. The mixed history made the diagnosis obscure, but the exploring needle cleared up all doubt, and the withdrawal of more than a quart of serous effusion of hæmorrhagic character relieved the urgent symptoms and facilitated a cure of the pleurisy and greatly improved his general health.

The next case exceeds anything on record, so far as I have been able to find in medical literature, as to the number of aspirations, quantity of effusion withdrawn, and persistent refilling of the sac enveloping the left lung. The patient was sixty-one years old. For several months he had been losing weight, evidently from some more than ordinary disorder of nutrition. He was unable to lie in bed. When I first saw him, on account of difficult breathing, his dyspnœa was so great that he had to be fanned day and night to assist him in his fight for breath. On examination of the chest, the heart was found pushed over with the apex beat under the right nipple. The intercostal spaces of the left side were bulged, the percussion note was dull, even flat, and vocal fremitus totally abolished. A hypodermic needle inserted withdrew serous effusion strongly stained with blood. The diagnosis at this stage of the case lay between a tuberculosis or cancerous condition as the seat of the trouble. The absence of the physical signs of the former and lack of pain, and rare occasion of the latter disease in the lung or pleura, left the ætiology not clearly defined. However, we did not wait longer to verify the predisposing causes in the case, but without delay withdrew by aspiration ten pints of bloody effusion to save the patient from collapse, which was imminent from the encroachment of the fluid upon the lungs and heart. This ameliorated the distressing symptoms and made the patient comparatively comfortable. But the refilling of the pleural cavity was so rapid that during the next twenty weeks I aspirated him on an average once a week, taking from three to ten pints at an operation of fluid of the same consistence, making twenty-one operations in twenty weeks, aggregating by measure over fifteen gallons of bloody fibro-serous exudate from the pleural sacs covering the left lung. During the latter part of this period pronounced indications of the presence of cancer became manifest, and, on autopsy, the collapsed lung was found to be so thoroughly contracted and infiltrated with cancerous deposit that it was not larger than one's fist. Large areas of the pleural surface in proximity to the nidus of deposit were broken down by ulceration.

The next is a case of empyema, and is especially interesting to me on account of the delightful recovery, although it was of purulent effusion into the pleural cavity instead of simple serous exudate. Katie G., aged six, May 7th. She was taken with double croupous pneumonia; temperature, 105°, and corresponding exaggerated symptoms. A painful pleurisy complicated the left lung. As the case progressed it was watched with serious apprehension. While the right lung cleared up favorably, the left side was slow and retarded. A considerable elevation of temperature prevailed, and the closest attention to stimulation and supportive measures was necessary to keep up the vital forces. During the fourth week there were pronounced symptoms of septic absorption from some source, and also evidence suggestive of accumulation of exudate into the left pleural cavity. The exploring needle proved this exudate to be pus. The disturbance to the breathing necessitated its immediate removal. Nearly a pint of creamy pus, found to be heavily loaded with pneumococci under the microscope, was aspirated and the cavity washed out with an antiseptic solution. But this was not found sufficient, and one week later, after chloroforming and carefully disinfecting, I made an incision an inch long between the ribs, low down in the axillary line, and a drainage-tube, of twice the size of a lead-pencil, six inches long, well perforated, was pushed through the opening, and lay across the dependent portion of the sac. The tube drained freely into a dressing of antiseptic gauze. The septic symptoms quickly subsided. For eight weeks I kept the tube in, gradually withdrawing it, and a few days later the wound closed up entirely.

The operation of thoracentesis is not a dangerous or mischievous one if conducted intelligently and with careful antiseptic precautions. The technique I follow out, in brief, is as follows: The hands, surface of the body, and all instruments are made thoroughly antiseptic. A few drops of four-per-cent. solution of cocaine are injected into the skin, then into the muscles at the site of operation, which prevents all pain as the operation proceeds. A large needle attached to the vacuum bottle is plunged through the intercostal space at this time, and the exudate drawn off till a faint feeling is experienced, or a spasmodic cough, which indicates that the lung is incapable of further expansion, when the needle is quickly removed with suction force still applied to prevent entrance of air into the cavity. This operation should be resorted to as soon as the circulatory apparatus is being especially disturbed or there are signs of threatened cardiac failure, whether there is difficult breathing from much or little effusion. There is, however, sometimes great damage done by excessive pressure in the absence of dyspnœa or other urgent symptoms, which danger should not be overlooked. Neither should the necessity of a subsequent operation be lost sight of, for we should bear in mind that the cavity will refill as long as the membrane is in the same condition to secrete. While the removal of the liquid facilitates the toning up of the inflamed secreting tissues, undoubtedly the greatest advantage of this surgical interference is the mechanical relief afforded by relieving the pressure as a conservative measure in preserving the vital organs. The same conditions apply in empyema as in simple pleurisy, only that in this instance we have an exudate composed of pus, with the additional danger of septic absorption. Effusion of this consistence undoubtedly contains dangerous elements of infection, and no time should be lost in making a free incision and thoroughly draining as long as there is any discharge.

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* Read before the Iowa and Illinois Central District Medical Association, September 29, 1892.

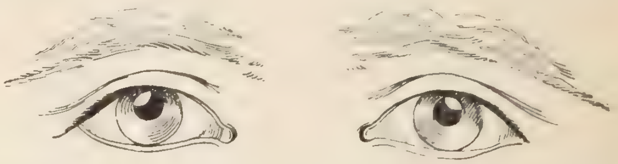
A CASE OF ECTOPIA LENTIS,

CONGENITAL, BILATERAL, AND SYMMETRICAL.

By ALBERT E. BULSON, Jr., B. S., M. D.,
FORT WAYNE, IND.

The patient, a schoolboy, eleven years of age, was brought for examination and treatment June 2, 1892. The mother stated that the boy had always been robust and healthy, and had had no discernible trouble with the eyes until the fifth year of age, when an attack of "convulsions and fever" soon caused the child to manifest signs of impaired vision. An optician was then consulted who pronounced the trouble "near-sightedness" and attempted to correct the defect by the adjustment of glasses, but, failing to improve the vision in this supposed case of myopia, had given as his opinion that the child would outgrow the trouble and that, therefore, it needed no further attention. Upon being sent to school the boy showed a general disinclination to do any kind of study or work requiring close application of the eyes, and when compelled to so apply himself would wrinkle his face into a most disagreeable scowl and hold his books within four inches of the eyes. The patient has never complained of any trouble until lately, and then nothing beyond the discomfort of limited vision and the annoyance of having to hold objects at a near point in order to see distinctly.

The boy has every appearance of being in perfect health, is of good growth for his age, and presents no signs of abnormities in development other than the one to be described. The examination of the eyes shows them to be essentially alike and the results are here given: Ocular conjunctiva slightly hyperæmic (patient just recovering from an attack of acute rhinitis); cornea transparent and of normal curvature; anterior chamber of increased depth; pupil contracted, but mobile; iris of healthy appearance, presenting slight iridonesis, and freely dilatable under the influence of a mydriatic; crystalline lens transparent as far as can be observed and of apparently normal size, but displaced upward and outward at about 45°, the lower margin of the lens being situated just outside the visual axis; media clear; field of vision fairly good; general color sense obtunded; fundus of normal color, but the disc somewhat smaller than usual, and the retinal vessels of a shrunken appearance. V. = $\frac{5}{200}$. + D. 9 gives V. = $\frac{20}{40}$ and + D. 12 enables the patient to read Snellen No. 3 at sixteen inches from the eyes. The above-described glasses were ordered.



September 25th.—Patient reports that he has worn the glasses constantly since his last visit and finds only comfort in their use. The mother says that the boy has progressed more in school since wearing the glasses than he has before in two years, and that he has entirely ceased scowling and wrinkling the face when at his work. Examination shows no change in the appearance of the eyes since the first visit, except that the hyperæmia of the ocular conjunctiva has disappeared, and the retinal vessels present a more normal appearance. A test of the vision shows that there has been a decided improvement for distance—V being $\frac{20}{30}$. The mother and sister of the patient were examined on this date and found to be slightly hypermetropic, but with no other discernible impairment of vision, either pathologically or anatomically.

The mother insists that the boy had normal eyes up to the fifth or sixth year of age, or until the attack of sickness, but this statement does not seem to be borne out by the evidences obtained in the examination. Loring and Fuchs are authorities for the statement that congenital ectopia lentis may not show itself in the early years of childhood, but only later, and then assumes a progressive character. It is barely possible, then, taking the mother's statements into consideration, that the malposition in this case was not so pronounced up to the fifth or sixth year of age, and that it then assumed a progressive character, quickly reaching the point already described. It is more probable, though, that the dislocation has been in its present state since birth, inasmuch as a progressive dislocation of the lens would cause such decided changes in vision at different times (such as binocular diplopia when the edge of the lens crossed the visual axis) as to be distinctly noticed by even a six-year-old boy of ordinary intelligence. That the "convulsions and fever" had anything to do with the trouble is eliminated from the discussion owing to the fact that there are no evidences of a spontaneous luxation, or of pathological changes which would tend to favor spontaneous luxation—features that one would expect to find were it probable that the anomaly had been rapidly produced in consequence of the systemic disease.

The case is an interesting one from the fact that the eyes are congenitally aphakous, and hence entirely destitute of accommodation, and that the transparent lens in its present position shows no disposition to change its location or produce any irritation whatsoever.

A CASE OF
LABIAL CHANCRE FROM A CIGAR.*

By ROBERT C. KIRKPATRICK, M. D.,
MONTREAL, CANADA,
ASSISTANT SURGEON, MONTREAL GENERAL HOSPITAL.

Dr. W. S. Gottheil, in a letter to the *New York Medical Journal*, published on March 19, 1892, points out the danger of syphilis being communicated by cigars. He gives the history of two cases of secondary syphilis, one of whom was suffering from a chancre on the lip which she had acquired by drinking out of the cup used by the other, who had numerous mucous patches in the mouth. The girls were cigar finishers, and took the cigars from a machine, biting off the ends and using their saliva for finishing the tips. Neither of them would believe that the disease was contagious, and both continued to work as before, "because it took too long to use the knife and brush."

These are by no means isolated cases, and that the danger is not imaginary is shown by the following history:

J. W., aged forty-one, hotel clerk, presented himself at the Montreal General Hospital on May 27, 1892, complaining of a sore on the left side of his lower lip, which sore had been there for two months. The free edge of the lip showed an ulcerated surface about an inch in length by a quarter of an inch in breadth, and quite superficial. The lip was very much infiltrated about the ulcer, and was very hard to the touch, the swelling being about the size of a walnut. There was no rash over the body, and there were no mucous patches about the mouth. One small gland could be felt under the chin.

He was put upon mercurial treatment at once, and in about three months the ulcer had healed and all infiltration disappeared. About a month after commencing treatment a single pigmented spot, of about the size of a pea, appeared on the forehead, and disappeared about the same time as the ulcer.

The patient is a married man, but his wife is not at present in the city. He positively denies any venereal cause for the disease. He does not smoke a pipe, but does smoke cigars. A few weeks before the sore appeared on the lip some cigarmakers were living at the hotel where he was clerk. These men frequently gave him cigars, and he afterward found out that two of the number were suffering from syphilis. This, coupled with the fact that the sore appeared on the side of the mouth on which he habitually held the cigar, makes it most probable that he contracted the chancre—for such the sore undoubtedly was—from the cigarmakers through the medium of the cigar.

163 Mansfield Street.

The Johns Hopkins Medical Faculty.—For several years past the trustees of the Johns Hopkins University have been endeavoring to complete the medical school, of which all the departments have been organized except those of therapeutics and anatomy. Transitory financial reverses prevented the organization of the school three years ago, when the hospital was opened, and the trustees made an appeal for half a million dollars to enable them to proceed with the work of medical education. About two hundred thousand dollars were raised, and it is now announced that Miss Mary Garrett, of Baltimore, has most generously given the three hundred thousand dollars necessary to complete the fund.

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THE HYGIENIC SIGNIFICANCE OF A "WHITE CHRISTMAS."

We are all familiar with the old saying, of English origin doubtless, that "a green Christmas makes a full churchyard." The underlying significance of this proverb is far more evident to the dwellers of the British isles than in our own part of the temperate zone. There, in England especially, the absence of snow during December is commonly coincident with fog and haze and scarcity of sunshine—depressing conditions; while a fall of snow tends to clear the atmosphere and supply a crisp and invigorating aerial condition. Here, in our Middle States, we have reason to dread the extremes of cold that are often precipitated upon us with a December snowstorm. To us it often means a high mortality by pneumonia. Commenting upon the snowfall of a fortnight ago, an editorial writer in the *New York Herald* thus remarks concerning "the treasures of the snow," of which Job spoke: "These treasures are manifold, but none of its charms is greater than its light-reflecting quality, by which it brightens and cheers the gloom of the solstitial period of winter in all the bleak, high latitudes of the globe." Therefore it is a hopeful sign, this ante-Christmas blanket of white, and all persons who are imbued with the spirit of the old adage may confidently regard the snowfall of December as the harbinger of the proverbially happy and healthy "white Christmas." Adopting this explanation, we perceive that it is our nervous apparatus that is benefited by that climatic condition, which impresses us in a peculiarly grateful way after a spell of murky or foggy weather. It is helpful, also, for it ekes out the daylight and assists the belated traveler along roads that are overshadowed by woods. A December snowfall is as benign, therefore, as it is beautifying, during these days of the minimum of sunshine. "During these dark days of the winter solstice," adds the same writer, "the glitter of the snow most happily compensates for the paucity of sunlight, and the more strikingly is this point realized when, as was the fact last week, the trees and all exposed surfaces were coated with the glazed frost, or rime, or *verglas* as the French call it." Respecting the cleansing influence of snow over a foggy and dust-laden condition of the atmosphere, sanitary writers are of one mind, that it is second only to a vigorous rainfall in rendering the air more respirable, because cleaner and more amply ozonized.

MINOR PARAGRAPHS.

"MERELY PERITYPHLITIS."

A recent press dispatch announces that Mrs. Langtry's physician has informed the London *Times* that, although the lady is suffering from a relapse of her malady, it is not to be considered as serious, being "merely perityphlitis."

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* Read before the Montreal Clinical Society, October 22, 1892.

ITEMS, ETC.

Infectious Diseases in New York.—We are indebted to the Sanitary Bureau of the Health Department for the following statement of cases and deaths reported during the two weeks ending December 27, 1892:

DISEASES.	Week ending Dec. 20.		Week ending Dec. 27.	
	Cases.	Deaths.	Cases.	Deaths.
Typhus	1	2	0	1
Typhoid fever	19	5	20	7
Scarlet fever	140	11	118	8
Cerebro-spinal meningitis	0	1	1	1
Measles	104	13	102	3
Diphtheria	125	33	87	17
Small-pox	1	0	5	0

The Northwestern Medical and Surgical Society, which held its twenty-fourth annual meeting at the residence of Dr. Landon Carter Gray on December 21st, has recently issued a publication containing, besides its constitution and by-laws, a brief historical sketch of the society since its organization, in 1869, and a complete list of its members. The officers elected for the year 1893 are: President, Dr. S. Newton Leo; vice-president, Dr. Robert Milbank; secretary, Dr. Henry Ling Taylor; and treasurer, Dr. Frederick Peterson.

The Medical Society of the County of New York.—The programme for the meeting of Monday evening, the 26th inst., included a paper entitled How Success is gained in Gynæcological Plastic Surgery, by Dr. Thomas Addis Emmet; and one on A New Agent in the Treatment of Epilepsy, by Dr. Paul Gibier.

The Western Reserve Medical College.—It is announced that a gift of $125,000 has been made recently to the Medical College of the Western Reserve University.

Changes of Address.—Dr. Frank W. Olds, to Williamstown, Mass.; Dr. Frank Van Fleet, to No. 49 East Twenty-third Street; Dr. Milton E. Van Fleet, to No. 158 East Eighty-first Street.

Army Intelligence.—*Official List of Changes in the Stations and Duties of Officers serving in the Medical Department, United States Army, from December 11 to December 24, 1892:*

EGAN, PETER R., Captain and Assistant Surgeon, is granted leave of absence for four months, with permission to go beyond sea.

GLENNAN, JAMES D., Captain and Assistant Surgeon. The leave of absence granted is extended thirteen days.

WOLVERTON, WILLIAM D., Lieutenant-Colonel and Deputy Surgeon-General, is relieved from duty at Fort Schuyler, New York, and will report in person to the commanding officer, Watervliet Arsenal, West Troy, N. Y., for duty at that arsenal.

WILLCOX, CHARLES, First Lieutenant and Assistant Surgeon, will, upon the recommendation of the medical director, Department of California, report to the commanding officer, Presidio of San Francisco, for temporary duty at that post, until the departure from Angel Island, Cal., of GARDNER, WILLIAM H., Major and Surgeon, when he will proceed to Angel Island and report to the commanding officer of that post for temporary duty.

POLHEMUS, ADRIAN S., Captain and Assistant Surgeon. Leave of absence for two weeks on surgeon's certificate of disability, with permission to apply for an extension of two weeks, is hereby granted.

BANISTER, W. B., Captain and Assistant Surgeon, is hereby granted leave of absence for fifteen days, to take effect on or about January 11, 1893.

Naval Intelligence.—*Official List of Changes in the Medical Corps of the United States Navy for the week ending December 17, 1892:*

STITT, E. R., Passed Assistant Surgeon. Detached from Receiving-ship Franklin and ordered to hospital, Norfolk, Va.

KEENY, J. F., Passed Assistant Surgeon. Detached from Naval Hospital, New York, and ordered to the U. S. Steamer Ranger.

BERRYHILL, T. A., Passed Assistant Surgeon. Detached from U. S. Steamer Ranger and ordered to the Fish Commission Steamer Albatross.

WIEBER, F. W. F., Passed Assistant Surgeon. Detached from the Fish Commission Steamer Albatross and granted month's leave.

SMITH, G. T., Assistant Surgeon. Detached from Coast Survey Steamer Hassler and to proceed home and wait orders.

BRATHWAITE, F. G., Assistant Surgeon. Detached from the U. S. Steamer Fern and ordered to the U. S. Steamer Chicago.

HOPE, J. S., Assistant Surgeon. Detached from the Receiving-ship Franklin and ordered to the U. S. Steamer Fern.

WHITFIELD, J. M., Assistant Surgeon. Detached from the U. S. Steamer Chicago and granted one month's leave.

Society Meetings for the Coming Week:

MONDAY, *January 2d:* German Medical Society of the City of New York; New York Academy of Sciences (Section in Biology); Morrisania Medical Society (private); Brooklyn Anatomical and Surgical Society (private); Utica Medical Library Association; Corning, N. Y., Academy of Medicine; Boston Society for Medical Observation; St. Albans, Vt., Medical Association; Providence, R. I., Medical Association; Hartford, Conn., Medical Society; South Pittsburgh, Pa., Medical Society; Chicago Medical Society.

TUESDAY, *January 3d:* New York Obstetrical Society (private); New York Neurological Society; Elmira, N. Y., Academy of Medicine; Buffalo Medical and Surgical Association; Ogdensburgh Medical Association; Medical Societies of the Counties of Broome (quarterly) and Niagara (semi-annual—Lockport), N. Y.; Hudson (Jersey City) and Union (quarterly), N. J., County Medical Societies; Chittenden, Vt., County Medical Society; Androscoggin, Me., County Medical Association (Lewiston); Baltimore Academy of Medicine.

WEDNESDAY, *January 4th:* Society of the Alumni of Bellevue Hospital; Harlem Medical Association of the City of New York; Medical Society of the County of Richmond (Stapleton), N. Y.; Medical Microscopical Society of Brooklyn; Penobscot, Me., County Medical Society (Bangor); Bridgeport, Conn., Medical Association; Philadelphia County Medical Society.

THURSDAY, *January 5th:* New York Academy of Medicine; Brooklyn Surgical Society; Society of Physicians of the Village of Canandaigua; Boston Medico-psychological Association; Washington, Vt., County Medical Society (annual—Montpelier); Obstetrical Society of Philadelphia; United States Naval Medical Society (Washington).

FRIDAY, *January 6th:* Practitioners' Society of New York (private); Baltimore Clinical Society.

SATURDAY, *January 7th:* Clinical Society of the New York Post-graduate Medical School and Hospital; Manhattan Medical and Surgical Society (private); Miller's River, Mass., Medical Society.

Letters to the Editor.

THE ACQUISITION OF PEDICULOSIS IN PUBLIC CONVEYANCES.

16 EAST THIRTIETH STREET, *December 19, 1892.*

To the Editor of the New York Medical Journal:

SIR: Having had within the past few weeks two patients, a lady and a gentleman, who had acquired pediculosis from traveling in public conveyances, I am led to ask through your columns how general this is and if some general expression of opinion from the profession may not be of value in checking it. The first patient could not tell me definitely as to her exposure. She had been traveling some time in sleeping cars and in boats. She suffered from pediculosis capitis et vestimenti. The second had just finished a long trip in a drawing-room car. He was satisfied that the water-closet was the source of his infection. Both were people of intelligence and refinement, and both had traveled first-class. I do not know what precautions are taken by the transportation authorities, but, if the experience of other physicians is similar to mine, they are manifestly imperfect.

Stuyvesant F. Morris, M. D.

CHOLERA AND IMPORTED RAGS.

New York, *December 26, 1892.*

To the Editor of the New York Medical Journal:

Sir: Referring to Dr. A. McL. Hamilton's letter in the *Journal* for December 24th, I desire to state for the information of the many to whom the Report of the Cholera Epidemic in the United States in 1873 is not easily accessible that there is no mention in the histories of the "Tent-Havre, Antonson, and Russian cases" of rags, nor is there any intimation that these cholera cases were caused by rags. So that all that I stated in my letter of December 10th remains unrefuted; and Dr. Hamilton, who seems unable to distinguish any difference between clothing and rags, has not yet cited a single instance in which the latter have brought cholera to this country.

The cases referred to are alleged instances of the introduction of cholera by clothing; and they will not bear analysis to support that idea, for in not one instance is there any demonstration that cholera existed in the regions from which these people came, while it did exist in the United States in localities through which they passed *en route* to their destination.

Not even a tyro in bacteriology would insinuate, as does Dr. Hamilton, because rags are filthy and stained with blood, that they are therefore the media for any infectious or contagious disease; and the citation of finding such rags in a bale as good evidence that rags should be excluded as merchandise is ludicrously suggestive of "*ne sutor ultra crepidam.*"

It is greatly to be deplored that sanitary science should be made ridiculous by the assertion of fallacious and untenable theories, however sincerely and energetically they may be promulgated.

S. T. Armstrong, M. D.

Proceedings of Societies.

AMERICAN LARYNGOLOGICAL ASSOCIATION.

Fourteenth Annual Congress, held at Boston on Monday, Tuesday, and Wednesday, June 20, 21, and 22, 1892.

The President, Dr. S. W. Langmaid, of Boston, in the Chair.

(*Continued from page 723.*)

Intubation for Chronic Stenosis of the Larynx in a Boy Twelve Years of Age.—Dr. C. H. Knight, of New York, read a paper with this title. (See page 736.)

Dr. Bosworth: Dr. Knight's paper is of special interest to me as affording an opportunity of clearing up the obscure question of the pathology of this form of laryngitis. In the second volume of my recent work on *Throat Diseases*, I have taken the ground, in discussing the subject of subglottic laryngitis that the especial lesion is due to hypertrophic changes in the lymphatic tissue in the subglottic portion of the larynx. Sappey has shown us that this region is the seat of an unusually rich distribution of the lymphatics in children, and in endeavoring to account for the enormous thickening which is met with in this region, in the disease which Dr. Knight has described, we are forced to the conclusion that it is lymphatic in character, especially as hypertrophic changes in the mucosa proper could scarcely assume such proportions. I trust that Dr. Knight will go farther in his case and have the tissue examined with reference to this point.

Dr. John O. Roe: Intubation is not only an admirable method, but at the present time we might say it is the only proper method of treating certain cases of stenosis of the larynx.

An exceedingly interesting case of stenosis of the larynx came under my observation last February, in which the employment of intubation gave a most happy result. The stenosis in this case was due to a syphilitic gumma situated just below the left vocal cord. The patient had for three days been suffering from extreme dyspnœa, and it was thought on several occasions that she would die from suffocation. On my being called in consultation to see the patient, a laryngoscopic examination revealed the cause of the difficulty. The tumor was so located below the cord as to press it upward and over against its fellow, and to cause great obstruction to inspiration, while expiration was comparatively free. I at once sent for my instruments for intubation, and as speedily as possible inserted a tube, which was with some difficulty forced past the obstruction. The relief from the dyspnœa was immediate and permanent. The patient was placed upon the use of large doses of iodide of potassium, and the gumma was so far reduced in four days that the tube became loosened and was coughed out, being no longer required, and the patient speedily recovered. This case will be found reported in full in the *Buffalo Medical and Surgical Journal*, 1890–'91, p. 718.

The method of treating stenosis of the larynx by intubation, in either acute or chronic cases, is far preferable to the use of Schrötter's dilators or, in fact, any other method of dilating the larynx. It is only in exceedingly rare cases that it will not entirely take the place of tracheotomy.

Dr. C. C. Rice: The value of the O'Dwyer tube as a substitute for preliminary tracheotomy in cases of laryngeal growths is just beginning to be appreciated. In a case of multiple papilloma of the larynx in a child, several of the growths being attached to the vocal bands, I did not consider it safe to introduce the forceps before resorting to tracheotomy, but for the relief of the urgent dyspnœa which followed the introduction of the forceps the O'Dwyer tube was placed in the larynx. The growths were removed by several operations with the forceps, and the tube was replaced after each seizure with the forceps. The subsequent course of such cases is usually unsatisfactory, as Dr. Knight has said, and in my case regrowth of the tumor finally necessitated preliminary tracheotomy and thyreotomy. In syphilitic cases, like Dr. Roe's, and in those where the growth is single, intubation skillfully performed is a satisfactory substitute for preliminary tracheotomy, but in children, in whom a laryngeal operation is more difficult and in whom the growths are apt to recur, I think it will be conceded that tracheotomy is the wiser operation.

Dr. J. Wright: I have been interested in the remarks of Dr. Bosworth regarding the nature of these papillomatous growths. I have examined a number of them and found the surface of the projection presenting the same appearance as papillomatous growths, while deeper the appearance was that of ordinary inflammatory tissue, very hard to distinguish microscopically from lymphoid growths. Regarding subcordal laryngitis, I have never had opportunity to make such examination.

Dr. Knight: As already stated in the paper, the examination of what structure could be obtained during life was unsatisfactory. The pathologist's report on the post-mortem specimen refers to the ventricular bands. I will have the vocal cords and subjacent tissues examined, although there can be but little doubt that in the advanced stage of the lesion similar changes had taken place at the site of actual stenosis.

Dr. Bosworth replied to an interrogatory by Dr. Mackenzie that he regarded the change as hyperplastic in a large degree, quite similar to that occurring in enlarged tonsils.

Rare Forms of Laryngeal Growths.—Dr. A. W. MacCoy, of Philadelphia, read a paper on this subject. (To be published.)

(*To be continued.*)

NEW YORK NEUROLOGICAL SOCIETY.

Meeting of December 6, 1892.

The President, Dr. M. Allen Starr, in the Chair.

Enormous Doses of Paraldehyde in a Case of Acute Mania.—Dr. William D. Granger reported a case of which a brief summary was given on page 662.

The Ætiology of Chorea.—Dr. Charles Henry Brown read a paper on this subject. He stated that the mechanism that prompted the peculiar inco-ordinate movements which make up the objective neuro-muscular phenomena of chorea had never been explained. The recorded pathological evidences served only to prove that some irritating process had been at work upon the cerebral and spinal motor tracts and co-ordinating adjuncts. The mortality from chorea seemed to be greater in Great Britain than here, and the English observers had given more attention to the gross lesions, which apparently were the result of complications, and included, chiefly, cardiac valvular troubles and embola, pericarditis, and vaso-motor changes. The reliable accumulated data of the microscopical conditions of the brain and spinal cord were somewhat limited; they, however, attested that some morbific irritant had been at work. There was first hyperæmia; this resulted in exudates and was complicated with hyperplasia of connective-tissue elements, which took place throughout the motor areas, and the end was resolution. The morbific stimuli which incited the nutrient distributors to the motor areas to rebellion and disease must in some way, by natural selection, choose this location. Among the chief predisposing causes of chorea was heredity. Age was an important positive and relative factor. As a rule, chorea was confined to the period of adolescence. Sex and pregnancy were also important predisposing factors in the ætiology of the disease. Anæmia and malnutrition were causes which applied directly and equally to all correlative affections of chorea. Shock or sudden fright was a very rare exciting cause of chorea. Dr. Herter had drawn attention to the fact that excessive excretion of uric acid was a very constant feature in pronounced chorea. There was a diminution of the chlorides in relation to urea. The urine in almost every case was of high specific gravity (1·024 to 1·030) and small in amount. The most common nervous affection of rheumatism was chorea. The rheumatic diathesis in children was not expressed in the same way as in the adult. In the latter it showed more frequent manifestations in the muscles and joints; in childhood it might only be expressed in so-called growing pains, erythema nodosum, slight stiffness, etc. Rheumatism was essentially a disease of the motor apparatus. Chorea was a disease of the motor centers. The analogy was interesting. While we recognized that rheumatism often immediately preceded an attack of chorea, there were but few cases observed where the onset of chorea was immediately followed by an attack of rheumatism. In many cases that had come under the author's observation the rheumatic phenomena, such as articular swellings, exudations, and cardiac complications, had not made their appearance until months and even years after the chorea. Chorea was rarely associated with rheumatism in the adult. The subcutaneous nodules sometimes observed in rheumatic persons were an exudate and connective-tissue hyperplasia, with abundant vascular supply. In this nodule lay the key to an homologous exudate and connective-tissue hyperplasia that gave rise to the fibrinous nodules on the valves and also the little colloid and hyaline bodies found in the choreic brain. Until we knew the nature of rheumatism, that of chorea would be mysterious. Distemper caused chorea in dogs. Chorea had also lately been transmitted by inoculation from one dog to another. While the author did not maintain that the rheumatic poison was always the cause of chorea, yet, as it was the most common cause of joint affections and was always the cause of the subcutaneous nodule, and as chorea was so intimately associated with these nodules, a relation to rheumatism existed which was much more common than was generally admitted.

Dr. B. Sachs had never seen a case of chorea associated with these subcutaneous nodules. He objected to making them an ætiological factor in chorea on account of their extreme rarity.

Dr. Brown said that while the subcutaneous nodule was rare in this country it was quite common in England. Dr. Barlow had reported a great many cases wherein this nodule, which was simply an exudate, had been associated with chorea and rheumatism.

Tumor of the Left Frontal Lobe of the Brain; Operation; Recovery.—Dr. Arthur Booth reported the case of a man, twenty-four years old, whose symptoms were considered sufficient to warrant the diagnosis of an intracranial tumor and its location in the anterior fossa, or, more definitely, in the left frontal lobe. The patient was referred to Dr. B. F. Curtis, who concurred in the diagnosis and advised a surgical operation. Dr. C. L. Dana, who saw the patient at this time, also concurred in this opinion. The operation was performed on September 30th by Dr. Curtis, at St. Luke's Hospital. The tumor was exposed and was found to be covered by a tough, soft, red membrane, containing a cheesy material, which was removed with a spoon. The circular opening in the bone was an inch in diameter. It was enlarged, and the dura was separated from the roof of the orbit, where the tumor was adherent and had caused absorption of the bone. The dura was now opened and the tumor enucleated with the finger. There was no shock following the operation; the patient slept well during the night, and the next day talked as well as before the operation. On October 6th an examination of the eyes showed extensive hæmorrhages occupying the entire right retina and two thirds of the left. There was no perception of light. On the 16th sight was suddenly recovered to some extent in the left eye. On the 22d the patient had a general epileptic attack, and after this again became blind, and had remained blind ever since. An examination of the eyes on November 3d revealed choked disc in both eyes. The healing of the wound was delayed by a tubercular infection, but it was now healed. Unfortunately, the patient was entirely blind, but this condition had not been unexpected, owing to the high degree of neuritis present before the operation. On this account it was to be regretted that the patient had not come under observation earlier.

Dr. B. Farquhar Curtis, who performed the operation, stated that it was carried out in an exploratory way. The bone was cut away until the limits of the tumor could be felt on all sides before the dura was incised. Although the operation lasted over two hours, there was hardly any shock and very little blood was lost. The slight hæmorrhage was probably due to the fact that the growth was tubercular.

Dr. David Webster said that he had examined the patient's eyes before the operation and observed a high degree of choked disc. The optic nerves were much swollen and sight was very much impaired, the patient being unable to count fingers with certainty. He was of the opinion that the removal of the tumor had had nothing to do with accelerating the blindness; the temporary recovery of the sight some days after the operation showed this. The total loss of vision was due to the natural progress of the disease of the optic nerves; probably complete atrophy.

Dr. Sachs referred to the psychical changes in connection with frontal tumors. Experiments on dogs had shown that when the frontal lobe was removed, either entirely or in part, the animals invariably became idiotic, as was inferred from the changes in their actions. In man also many cases had been reported wherein affections of the frontal lobe had been followed by marked psychical changes. The speaker had seen one case, however, where the autopsy revealed a very large tumor in the frontal region, and in that case there had been no change at all in the person's manner, etc. The value of this symptom, then, still seemed to be an open question. In tumors of a tubercular nature one could not hope to do much by operative procedures. It was questionable whether an operation could prolong the patient's life. In the case reported, of course, the tumor had been situated so near the surface that the wisdom of its removal was manifest.

Dr. C. A. Herter referred to the fact that in this class of tumors we usually had to deal with multiple growths, and there was always much danger of recurrence. He had seen one case of abscess of the frontal lobe, almost destroying the entire lobe, without any psychical changes. The presence of the abscess had not even been suspected.

Dr. J. F. Terriberry said that in one case of frontal tumor under his observation, in which the growth involved the middle of the anterior portion of both lobes, there had been decided psychical phenomena. The patient, who was a man of intelligence, lost all interest in his business, and became careless about his diet, habits, etc.

The President referred to a case where a large tumor was removed from the frontal lobe. The growth produced decided mental symptoms, which proved of great aid in its localization. These mental symptoms appeared from the very first. There were slight aphasia and paralysis on the right side. Of twenty-six cases of frontal-lobe lesion, fifteen had shown very marked psychical symptoms. The majority of cases of frontal lesions collected by him since 1884 showed the existence of psychical symptoms. In cases in which the left frontal lobe was invaded, the proportion in which mental symptoms were present seemed to be higher than where the right lobe was invaded.

Dr. Booth said that when there was a tumor creating pressure, which could be localized and removed—whether the growth was tubercular or not—he thought it ought to be removed.

The Diagnostic Significance of Tremor.—Dr. C. L. Dana, who opened a discussion on this subject, stated that his data had been obtained by studying twenty-five cases of tremor in various forms of nervous disease, with the aid of sphygmographic tracings procured by the method suggested by Dr. Peterson. Tremors differed in rate, in form, and in amplification, also as to whether they were continuous or not and as to where they were located. As to their rate, there were two kinds, the fine and the coarse. The French included also a tremor of medium rate—between the fine and the coarse. In the fine tremor the number of vibrations was from eight to twelve in a second, and in the coarse they were about half that number. As to form, amplification, etc., there were perhaps three different kinds: The vibratory, in which a limb shook as a whole; the segmental or oscillatory, in which a single segment was moved; and the jerky, which was rather an inco-ordinate movement. Most writers on this subject divided tremors into the intermittent and those that were more or less continuous. It was hard to make this distinction in actual cases. One might call those the continuous tremors which continued nearly all the time, as in nervous excitement and neurasthenia. Then there was the intermittent tremor, which stopped when the hand was at rest or when it was moved, as in paralysis agitans. There was one that was intermittent and intentional (meaning that it was brought out only by voluntary movements of the hand). They might be increased by tension, or rather extension, of the extremity. They might be greatest when the limb was at rest, as in acute alcoholism and paralysis agitans. Some became more pronounced on voluntary motion, as in certain scleroses. As a rule, the distribution of the tremor was of particular importance. There were those of the extremity, of the chin, the eyes, etc. With regard to the diagnostic significance of these various tremors, a particular clinical character could not as yet be assigned to each of them. In acquired neuroses and cortical neuroses, like general paresis, a fine vibratory tremor practically continuous was present, involving a large part of the body and both sides of the face. The rate was from eight to twelve to the second. There was a great difference of opinion as to the rate of the tremor in alcoholism. Dr. Peterson had stated that in delirium tremens it was as slow as six to the second, while most French writers said there was a fine tremor in these cases. In the degenerative neuroses the tremor was coarse, segmented, and intermittent. It usually affected one half of the body more than the other; the rate was from three and a half to six and a half to the second. In paralysis agitans the rate was about five to the second. Senile tremor, in the speaker's opinion, was only an irregular form of paralysis agitans. In the organic nervous diseases the tremor was coarse, jerky, intermittent, usually "intentional," and confined to certain segments or limbs.

Dr. Frederick Peterson presented a number of kymographic tracings representing tremors in various forms of nervous disease. In early alcoholism, he said, the rate of tremor was about ten to the second, but in delirium tremens it became coarse.

Dr. Landon Carter Gray said that these accurate tracings made with the kymograph would be of great value in the diagnosis of the different forms of tremor. He had thus far been baffled in trying to find out with absolute certainty the characteristics of the various forms of tremor, except in paralysis agitans. There were so many exceptions to the rule of an "intentional" tremor in disseminated sclerosis that it was a poor reed to lean upon.

Dr. Sachs had always considered facial tremor as characteristic either of alcoholism or of general paresis, but recently he had seen a number of cases of general neurasthenic disturbance in which a distinct facial tremor had been present.

Dr. Gray thought facial tremor an indication of general paresis in the vast majority of cases, but too much importance should not be attached to this symptom. He had observed it in neurasthenia as well as in other conditions.

Dr. E. D. Fisher had seen a facial tremor in dementia, or in dementia following mania, also in chronic alcoholism. He considered it a valuable sign, but one that could not be absolutely depended upon.

Dr. Gray stated that in one case of syphilis of the nervous system, mainly of the spinal cord, facial tremor had been very marked.

Dr. W. M. Leszynsky had observed facial tremor in tobacco poisoning, also in insanity not associated with general paresis or alcoholism.

Dr. A. D. Rockwell had recently seen a case of tremor of traumatic origin. The patient had received a severe injury, which had resulted in paralysis, from which she had quickly recovered. Subsequent to the paralysis she had suffered from a tremor which he had considered due to the injury.

Dr. Mary Putnam Jacobi suggested that the tremor might have been due to traumatic hysteria.

Dr. Granger said that facial tremors were seen so frequently in the insane that they excited no comment whatever. They were extremely common in dementia—a very coarse tremor. In acute mania there was a very fine tremor, like that in general paresis. In general paresis, however, there might be all sorts of tremors, from the finest to the coarsest. By itself, tremor was simply suggestive of the disease, and other symptoms should be looked for.

Dr. Peterson had seen a number of cases of neurasthenia in which facial tremor was present; he had also observed it in diffuse syphilis of the central nervous system.

The President confirmed the statement that tremor of the face was not very infrequent in severe types of neurasthenia, and thought it was not to be relied upon as a diagnostic symptom of general paresis.

Dr. Dana said that it was very rare indeed to observe facial tremor in any case of neurasthenia, no matter how severe, when there was no tension of the facial muscles—when the muscles were at rest. A tremor of the lips, for instance, without any tension of the muscles, he would certainly consider an evidence of serious trouble.

NEW YORK STATE MEDICAL ASSOCIATION.

Ninth Annual Meeting, held in New York on Tuesday, Wednesday, and Thursday, November 15, 16, and 17, 1892.

The President, Dr. Judson B. Andrews, of Buffalo, in the Chair.

(Continued from page 609.)

A Brief Report of Three Cases of Ectopic Pregnancy was presented by Dr. Henry D. Ingraham, of Erie County. The first case occurred in a single woman, who intentionally falsified the history and added to the difficulties in diagnosis, so that rupture occurred, and no operation was permitted until it was too late to save her life. The fact that she was single had probably misled the physicians who first saw her. In the second one there was a rupture into the abdominal cavity, and the blood became encysted in Douglas's *cul-de-sac.* Evacuation of this cyst resulted in recovery. In the third case there was a rupture into the broad ligament, with death of the ovum. When rupture occurred, abdominal section was the proper treatment, unless the rupture was within the folds of the broad ligament, when absorption usually took place. When there was doubt about the diagnosis, an operation was demanded. The use of electricity in the treatment of this condition not only was useless, but was trifling with human life.

Dr. Moore cited Bland Sutton's statement as to the tendency of ectopic gestation to occur in women who had been long sterile, and then reported a case of this kind. In this case he had checked very profuse hæmorrhage by packing with iodoform gauze.

Dr. Joseph E. Janvrin, of New York County, said he believed he had been one of the first in this country to advocate exploratory abdominal section in all cases in which the general symptoms pointed to ectopic gestation. The use of any form of electricity was simply postponing the operation. No one hesitated to perform laparotomy for a salpingitis; yet, if this was justifiable, such an operation was ten thousand times more justifiable in cases of ectopic pregnancy.

The Palliative Treatment of such Cases of Cancer of the Uterus and its Annexa as are not Amenable to Radical Operative Measures was the title of a paper read by Dr. Janvrin. The author believed that the first great desideratum in carrying out this treatment was that a properly appointed sanitarium should be provided in the suburbs of a large city, where fresh air and cheerful surroundings might lend their aid to the surgeon. The local treatment should consist in a very thorough and vigorous use of the sharp curette, making it penetrate deep into the base of the infiltration, and if in this operation the curette opened through the *cul-de-sac* into the peritoneal cavity, an antiseptic sponge with a thread attached should be placed so as to prevent descent of the intestines during the operation. The hæmorrhage was usually quite free, but it could be controlled with the hot douche, the use of a saturated solution of tannin, the application of the actual cautery, or, in particularly obstinate cases, temporarily tamponing the vagina. After all oozing had ceased, and the parts had been wiped dry, the raw surfaces were covered with pledgets of absorbent cotton, squeezed out in a fifty-per-cent. solution of chloride of zinc, care being taken to protect the intestines by a packing of iodoform gauze. The dressing was removed in twenty-four hours, and the cavity washed out with a 1-to-5,000 bichloride solution, thoroughly dried, and freely dusted with powdered iodoform. Usually the sloughs caused by the chloride of zinc came away at the end of a week, leaving a clean surface. The use of chloride of zinc in these cases was by no means novel, but the chief point of interest was the care taken to stop all oozing and to procure a dry surface before applying the chloride of zinc, as when such applications were made the results were much better. Internally, arsenic and the solid extract of red clover acted as powerful blood tonics, but had no specific action.

A Case of Puerperal Eclampsia at the Seventh Month, with a Few Thoughts as to Treatment, from Practical Experience.—Dr. Douglas Ayres, of Montgomery County, read a paper thus entitled. He related a case of puerperal eclampsia as a text for some remarks on the treatment. He considered that the early performance of venesection, especially in persons of full habit, not only warded off a threatened lesion, but favored absorption and prepared the way for other remedies. This method of treatment was attended by a much smaller mortality than any other. Chloral hydrate had first been recommended in eclampsia about twenty years ago, and at that time the author had tried it in a very severe case in which several convulsive seizures had occurred after a free venesection. It was given subcutaneously, and the patient recovered, but it was a long time before the ulcerations which it produced were healed. It controlled the convulsions better than chloroform, and was not so dangerous as the latter when long continued. It should be given per rectum. Morphine was useful in moderate doses, but he did not approve of the excessive quantities recommended by some authors. As a result of a long and active obstetrical practice, he had come to the conclusion that bold but judicious venesection was our sheet anchor, and that chloral hydrate was a very valuable adjuvant.

Pelvic Version.—Dr. T. J. McGillicuddy, of New York County, read a paper on this subject. In spontaneous pelvic version, the writer said, the breech presented, while the head and trunk passed toward the fundus of the uterus. Pelvic version was simply the artificial imitation of spontaneous evolution, and it was especially indicated in transverse presentations. It was most easily performed by the fingers inserted into the child's groin or over the crest of the ilium, by which means the breech was drawn down into the pelvis. This was aided by external pressure on the head and breech, thus approximating the two poles of the fœtus. In cases of transverse presentation its advantages over podalic version might be summed up as follows: 1. It is a much simpler operation, as it simply converts the case into an ordinary breech presentation. 2. It necessitates the introduction into the uterus of the fingers only, whereas podalic version requires the introduction of the whole hand and arm. 3. It is only necessary to move the child sufficiently to draw down the breech, while in most cases of podalic version the body of the child must be made to rotate around the whole cavity of the uterus. 4. There is consequently much less shock, and there is less danger of rupture of the uterus. It is also especially useful in those unfavorable cases in which the arm presents, with the shoulder pressed well into the pelvis, where the liquor amnii has been discharged, and the uterus is retracted on the child's body. Here podalic version is usually out of the question.

The Extraction of Steel from the Interior of the Eye by the Electro-magnet was the subject of a paper by Dr. Alvin A. Hubbell, of Erie County. He described a new electro-magnet which he had devised, that had proved more useful in his hands than those usually employed. In the construction of such a magnet it was very important that the "extension points" should be as near as practicable to the coil around the core, and no longer than necessary to reach the supposed location of the steel, for the power of attraction diminished very rapidly with the length. To increase the surface of the "point," it should be flattened at the end and for a short distance on the sides. Although the eye had been known to tolerate pieces of steel for long periods, this was quite exceptional, and there was nothing gained by postponing attempts at removing the steel with a magnet. By its use more or less vision could be preserved in the majority of cases, whereas without it in almost every case the sight would be entirely lost. The sensations of the patient and the state of vision were of very little help in making a diagnosis. The magnet should be made to pass as directly as possible along the lines of least resistance to the supposed or known location of the steel. That part of the ball through which the magnet could be introduced with the least danger to important structures and to sight, and which at the same time was the most accessible to every point within the vitreous chamber, was the sclera, just in front of the equator of the ball, and preferably in most cases on the outer side, between the external and inferior recti muscles. It was better to make the sclerotic incision after dissecting up a small triangular flap of conjunctiva at the place chosen.

The Treatment of Neglected Cases of Rotary Lateral Curvature of the Spine.—Dr. R. H. Sayre read a paper on this subject. (To be published.)

Paraplegia.—Dr. Charles W. Brown of Washington, read a paper in which he described a case of myelitis characterized by some unusual symptoms.

Dr. H. S. Williams, of New York County, had recently had a case not unlike the one described in the paper, as regarded its onset, and it had proved that the symptoms of myelitis were not so pronounced in some instances as was commonly supposed. It terminated fatally within a week, yet there was no marked impairment of sensibility, and there were none of the usual signs of paraplegia. The lumbar cord was found to be chiefly affected, and it presented unequivocal evidence of myelitis.

The Mental Symptoms of Fatigue was the title of a paper by Dr. Edward Cowles, of Somerville, Mass. The paper was so distinctly metaphysical as not to admit of being presented in abstract.

Dr. George M. Gould, of Philadelphia, who was invited to open the discussion, said that physicians were prone to look for organic causes of disease, but to him disease was simply abnormal physiology. Mind was only formulated vision, and, if vision was abnormal, an extra strain was thrown upon the mind, resulting in abnormal cerebral action. This "eye-strain" not only caused nervousness and irritability of the mind, but, according to his clinical experience, even resulted in gastric disorders and in anæmia.

Dr. James W. Putnam, of Erie County, said that, in order to find the cause of mental fatigue, we must seek in every avenue through which the mind received impressions. Dermatologists as well as ophthalmologists found many sources of brain irritation, and the surgeon observed similar results in patients with vesical calculus or with hæmorrhoids and in the child with an inflamed prepuce. He had frequently seen patients with no evident source of irritation assume a neurasthenic condition simply because they were living too humdrum a life.

Dr. H. S. Williams, of New York County, remarked upon the different view now taken of the mind, as compared with the teaching of only a few years ago. It had formerly been taught that a person occupied with physical labor, when fatigued in body, could rest himself by occupying his mind, but those who had tried this knew it was not a very satisfactory way of securing rest. Bodily fatigue prevented much intellectual effort.

The Question of Maternal Impressions.—Dr. Williams read a paper thus entitled. As usually considered, he said, the question of maternal impressions was: In what measure, if at all, could mental states of the mother operate to alter the potentialities that entered into a new being at the moment of conception? This question, however, involved two that were radically distinct, viz.: (1) To what extent could mental states of the mother affect the fœtus indirectly? and (2) to what extent could they affect it directly? The essential element was the existence of a direct mental transfer of energy from the mother to the fœtus. Modern biology had taught us to look upon every organism as a member of an endless series of organisms, all subject to a few universal laws. If this capacity of mental transfer existed at all, its operation could not be confined to any single race of beings. We must decide how far the alleged law of maternal impressions was in harmony with known biological laws. In the mother, the law of self-preservation yielded to the law of race preservation; all her instincts, habits, and capacities were made subservient to this. But, if the theory of maternal impressions was true, one capacity, an uncontrollable action of the mother's plastic mind, hung incessantly as a menace over the head of the new being. This view was not in accordance with the belief that each law must be in harmony with every other law throughout the universe. Why should the operation of this alleged law of maternal impressions be restricted to the child *in utero?* When the child was two years old it was still as dependent upon some other being for its nutrition as when it lay in the uterus, and it was probably the source of far greater maternal solicitude, so that the same maternal state should still be operative, though perhaps not to the same degree. This law of maternal impressions should be operative upon the new organism during its entire period of development. As this theory was incompatible with other and wider laws, the author rejected it. He admitted, however, that these were simply theories, and that experience must bring the final verdict. In conclusion, he expressed the opinion that a truly demonstrative series of cases on this subject would be the most momentous single contribution to biology and psychology that had appeared since the dawning of the Darwinian epoch.

A Clinico-pathological Study of Injuries of the Head, with Special Reference to Lesions of the Brain Substance.—Dr. Charles Phelps, of New York County, read a paper thus entitled. (To be published.)

Clinical Contributions to the Subject of Brain Surgery.—In this paper the author, Dr. Roswell Park, of Erie County.

gave some recent personal experiences in this field. Under the head of intracranial abscess he reported a case in which he had operated and evacuated an abscess of one frontal lobe, yet failed to discover during life the existence of an abscess in an exactly corresponding position on the other side. There had been absolutely no symptoms leading to a suspicion of the presence of this second abscess. The brain symptoms had first been noticed about four weeks before, after the removal of a polypus from the upper nasal passages, and the case was therefore of pathological interest as furnishing a clinical demonstration of recently discovered anatomical facts concerning the lymph-vascular connections between the nasal region and the encephalon. The author then reported two cases of hæmorrhage, with the measures adopted for the removal of the clot. Immediately after the injury, in the first case, the wound in the scalp had been sewed up without any antiseptic precautions, and consequently all subsequent efforts to undo the mischief done by the first medical attendant had proved fruitless. In the second case, an extradural clot presenting an area of sixty square centimetres had been removed, and the patient had made a rapid and complete recovery. Strangely enough, this enormous clot had produced little mental or motor disturbance. Speaking of fractures of the skull and intracranial hæmorrhage, the author said that the most progressive surgeons were coming to the conclusion that, even in cases of mild hæmorrhage, it was best to trephine in order to avoid the risks of a small clot being retained in the cranial cavity. Horsley maintained that every patient with fracture of the skull should be trephined, and the author considered that when trephining was properly done it added scarcely any appreciable danger, while it offered a most important prospect of relief, and one that no conscientious surgeon would willingly disregard. Concerning the important question of the surgical treatment of epilepsy, it was seldom possible before an operation to determine whether or not the patient was likely to be benefited, and surgery alone was rarely, if ever, sufficient to effect a cure. The surgical treatment must be accompanied, followed, and perhaps even preceded by medicinal and dietetic treatment, owing to the fact that in cases of pronounced epilepsy we had to combat not only a somatic lesion, but an epileptic habit. At present he was trying the plan devised by Dr. Beach, of Boston, of inserting a piece of sterilized gold foil between the scalp and the dura, to prevent the formation of adhesions, not only in operations for epilepsy, but in all cases where trephining of the skull was employed. The writer also reported three cases of dementia epileptica—*i. e.*, cases not of a distinctly epileptic type, but of a paroxysmal and emotional character—in which he had operated with apparent success. His experience with the new operation of linear craniotomy or craniectomy comprised six cases. Two of them had promptly been fatal, in two the patients had practically been unaffected by the operation, and in two the operation had been brilliantly successful. The two cases that had not been affected by the operation had probably belonged to that class of cerebral atrophies that had been called by Dr. Starr essentially hopeless. The two successful cases were a sufficient reward and justification for a score of unsuccessful ones. We had not yet learned the extent to which we could with reasonable safety interfere with the functions of the brain. The most desperate cases of brain surgery should be treated with the same attention to detail as though the prognosis were favorable. The profession generally should learn that the prognosis in many cases of mental disturbance was much more favorable when an operation is undertaken at an early stage than when it was done, as it usually was, as a last resort. In the cases of epilepsy in which he had operated he had never regretted doing too much, but in several instances he had been sorry that he had not done more.

Dr. James W. Putnam, of Erie County, had seen many of the cases described in the paper, and he concurred fully in the author's conclusions. Improvement had often followed in one or two years after an operation for epilepsy, if vigorous medicinal treatment had been continued. Some of these cases had proved more amenable to treatment with the bromides after operation than before. He related a case of supposed brain tumor in which trephining had resulted in stopping the severe headaches from which the patient had suffered.

Dr. F. W. Ross, of Chemung County, related a case illustrating the fact that in cases of brain injury the patient's fate often hung upon the work of the surgeon who gave the first aid.

The President said that the great obstacle to success in the treatment of epileptics was the habit of epilepsy. The bromide treatment must be continued faithfully and more than the usual amount of attention given by the medical attendant to the dietetic treatment.

Dr. John Cronyn, of Erie County, showed the fallacy of reporting prematurely on these cases by citing one in which a man had remained well for seven years and a half and then suffered a relapse.

(To be continued.)

Book Notices.

Epitome of Mental Diseases, with the Present Methods of Certification of the Insane, and the Existing Regulations as to "Single Patients," for Practitioners and Students. By James Shaw, M. D. Qu. Univ., Ire., Assistant Medical Officer, Grove Hall Asylum, Bow, London. New York: E. B. Treat, 1892. Pp. xv to 345. [Price, $2.75.]

In the first chapter the author gives definitions of insanity according to the teachings of several writers, as well as the classification of insanity according to the plan adopted by Esquirol, by the Commissioners in Lunacy, by Morel, by the International Congress of Alienists, by Skae, by Krafft-Ebing, by Bra, by Clouston, by Spitzka, by Savage, and by the Royal College of Physicians.

The second chapter is an alphabetical index of somatic and psychical symptoms with reference to the mental diseases in which they occur.

The third chapter is an alphabetical index of mental diseases, with their synonyms and symptoms according to the teachings of the more prominent alienists.

In the fourth chapter the usual ætiology of each form of insanity is given.

The fifth chapter, on diagnosis, gives clear directions for examining the patient, and suggests the diagnosis that may be made from certain associated symptoms.

The chapter on prognosis is arranged, like the others, with reference to the particular forms of insanity as well as to general prognosis. So the chapter on pathological anatomy, pathology, and pathogenesis gives both the conditions generally observed and those observed in special forms of insanity.

The chapter on therapeutics and hygiene considers the subjects of prophylaxis, the immediate relief of urgent symptoms, and the ultimate care and treatment of the insane.

The final chapter is devoted to legal regulation affecting the insane in England and in several of the United States and to forensic psychiatry.

It was the aim of the author to prepare a handy and practical book of reference for general practitioners, and we think that he has accomplished his object. To an extensive reading he has added the results of his own experience, though he has usually subordinated the latter where it has seemed that the name of some more widely known alienist would carry weight. The book is concisely written, the matter is well selected, and it is not with the desire of repeating a trite phrase that we say that all general practitioners will find the book useful.

We noticed on page 75 a printer's error of "febrillary" for fibrillary tremors; and this symptom, by the way, is not mentioned under tremor, in the chapter on symptoms.

On the Chemistry and Therapeutics of Uric-acid Gravel and Gout. Being the Croonian Lectures for 1892 delivered before the Royal College of Physicians of London, with Additions. By Sir William Roberts, M. D., F. R. S. London: Smith, Elder, & Co., 1892. Pp. vii-136.

The first lecture in this series is devoted to uric acid and its combinations, to the reactions and chemical constitution of the amorphous urate deposit, and to the comparative physiology of that acid. Dr. Roberts thinks that the quadrurates are the most important salts of uric acid, and says, in fact, that whenever and wherever uric acid exists in the healthy body it exists exclusively as a quadrurate. In the second lecture he traces the changes that the quadrurate undergoes in the urine and that lead up to the separation of uric acid in the free state as gravel and urinary sediment. The third lecture presents the changes that the quadrurate undergoes in the blood and lymph, and that lead up to the formation and deposition of sodium biurate in the tissues. In the fourth lecture the affinity of uratic deposits for connective-tissue structures is reviewed, and this affinity is considered to be the consequence of the richness of these tissues in sodium salts.

The bearings of these investigations on the therapeutics of gout are interesting, as they show that alcoholic beverages in moderation do not exercise an appreciable influence on the quantity of uric acid produced in the body, that the use of table salt by gouty patients should be limited, that alkalies, carbonate of lithium, and piperazine are of doubtful value, and that mineral springs are useful because they take gouty subjects away from home and increase the consumption of water. The book is a very suggestive and interesting study of the subject.

An American Text-book of Surgery, for Practitioners and Students. By Charles H. Burnett, M. D., Phineas S. Conner, M. D., Frederic S. Dennis, M. D., William W. Keen, M. D., Charles B. Nancrede, M. D., Roswell Park, M. D., Lewis S. Pilcher, M. D., Nicholas Senn, M. D., Francis J. Shepherd, M. D., Lewis A. Stimson, M. D., William Thomson, M. D., J. Collins Warren, M. D., and J. William White, M. D. Edited by William W. Keen, M. D., LL. D., and J. William White, M. D., Ph. D. Profusely illustrated. Philadelphia: W. B. Saunders, 1892. Pp. xx to 1209.

The reviewer feels that a work of this character, that "has been submitted in proof-sheets to all of the authors for mutual criticism and revision," as the preface states, is one that is almost beyond criticism, for it ought to express the consensus of opinion of the well-known men that have joined in its preparation, and should be singularly free from sins of omission or commission.

We were surprised when we first looked through the book that the different chapters were not signed, but a note in the preface informs us that the editors assume the responsibility for this. So we may speculate whether the chapters on bacteriology and pathology are the work of Park or of Senn, and whether that on fractures is the work of Pilcher or of Stimson; and any dissatisfaction that might arise because of the seeming need of such speculation is at once dissipated by the thought that, whichever wrote it, the other approved.

The first chapter of the work treats of surgical bacteriology, a subject that properly precedes the consideration of inflammation, of the process of repair, and of suppuration. From these the reader passes to the subjects of ulceration and fistula, thrombosis and embolism, the various infectious processes that are of surgical importance, and tumors. These are followed by the chapters on the surgery of the vascular and osseous systems, on fractures, on diseases and injuries of the muscles, tendons, and bursæ, on deformities, on the nerves, on the joints, on dislocations, on the lymphatics, and on the skin. Following these are the chapters on the surgery of the various regions of the body, on the general principles of surgery, on anæsthesia, on plastic surgery, on ligation of arteries, on operations on bones and joints, on amputations, and on minor surgery.

The conciseness with which the various subjects are considered may be judged of by the fact that the volume contains but 1175 pages; and it will be surmised that the student that adopts this as a text-book must be well grounded in the elementary principles of his profession. The editors have been very generous in their reference to the work of foreign authorities—more so, apparently, than to that of their fellow-countrymen.

A minor error is the statement that the "customary obstetrical position in England and in this country is upon the left side"; the statement is true as to England, but not as to the United States.

The editors have certainly presented the profession with a valuable book.

A Text-book of the Principles and Practice of Medicine, for the use of Students and Practitioners. By Henry M. Lyman, M. D., Professor of Principles and Practice of Medicine in Rush Medical College, Chicago. Philadelphia: Lea Brothers & Co., 1892.

In this book the author has attempted to embrace not only the results of his own experience, but also "the substance of the latest editions of the works of Ziegler, Hallopeau, Eichhorst, Cornil, and Babes, and of the collaborators of the *Traité de médecine*." The task which he has set himself is a difficult one, and, in order to accomplish it, in a volume of text-book proportions, it has been found necessary to exclude all subjects of an historical or controversial nature. This will not be regretted by students and practitioners, but it will limit the use of the book as a work of reference.

The author has departed from the ordinary classification and sequence of subjects, and adopted a plan by which one topic grows out of another as a natural sequence. After preliminary considerations he takes up the diseases that affect the surface of the body; finding these to be largely parasitic, he naturally proceeds to study the internal diseases produced by parasites. This leads to the study of the organs through which these parasites enter the system, this to the blood and circulatory organs, and this to inflammatory processes. The method is an attractive one and makes pleasant reading, for there are no sudden breaks in the sequence of thought.

The author has used excellent judgment in the allotment of space to the different subjects, and his illustrations are typical and well executed. Perspicacity of thought and clearness and brevity of diction are marked characteristics of the work, and we can hardly find fault with anything except some of the chapter divisions. These seem a little more numerous than necessary. One may say the work is not wholly original, much of its subject matter being drawn from other authors. The author, however, advises us of this in the beginning, and we can but admire the book.

A Manual of Medical Jurisprudence. By Alfred Swaine Taylor, M. D., F. R. S. Revised and edited by Thomas Stevenson, M. D. Lond., Fellow of the Royal College of Physicians, London, etc. Eleventh American, edited, with Citations and Additions, from the Twelfth English Edition, by Clark Bell, Esq., President of the International Medico-legal Congress of 1893, etc. Philadelphia: Lea Brothers & Co., 1892. Pp. xvi-17 to 790.

The eleventh edition of this standard work has been amended and rewritten in parts, and the editor has cited nearly seven hundred cases and authorities that will be of use for information for medico-legal jurists. We note that in this revision but little more than a mere mention is made of the subject of ptomaines, though these cadaveric alkaloids are not without importance from an analytical standpoint. The chapters on insanity are quite brief, judged from the importance of the subject in medical jurisprudence.

All physicians should be possessed of this work, for all are liable to be called at any time to give their evidence in court; and the welfare of others as well as that of the physician himself may depend upon the manner in which this evidence is given.

Diseases of the Lungs, Heart, and Kidneys. By N. S. Davis, Jr., A. M., M. D., Professor of Principles and Practice of Medicine, Chicago Medical College. Philadelphia and London: The F. A. Davis Co., 1892. Pp. vii-3 to 359.

The author states that he has elaborated this volume from his lecture notes on the diseases of the heart, the lungs, and the kidneys. He is evidently conversant with the most recent literature of the subjects on which he writes, and his therapeutical recommendations are satisfactory. We are glad to note the presentation in several of the chapters of the influence of self-intoxication on the phenomena of disease; and that, in the chapter on croupous pneumonia, attention is called to the senior Dr. Davis's recent refutation of the current impression that croupous pneumonia is most prevalent in the southern third of this country. The book is written from a practical standpoint, but its utility is handicapped by a poor index.

Reform in the Treatment of the Insane. Early History of the Retreat, York; its Objects and Influence, with a Report of the Celebrations of its Centenary. By D. Hack Tuke, M. D., LL. D., formerly Visiting Physician to the Retreat. London: J. & A. Churchill, 1892. Pp. 96.

This history is appropriately written by the descendant of the man who instituted the reform in the treatment of the insane in England by the establishment of the Retreat at York. After combating opposition of the most formidable character, William Tuke at last succeeded in securing the necessary finances to erect the building in 1792, and this volume was prepared for the centennial celebration of that event during the present year. The author has done well thus to commemorate an event that has been of such service to humanity.

The Extra Pharmacopœia. By William Martindale, F. C. S., and W. Wynn Westcott, M. B. Lond. Seventh Edition. London: H. K. Lewis, 1892.

During the two years that have elapsed since the publication of the sixth edition of this work, the number of new therapeutic articles added to the pharmacopœia has increased by almost three hundred entries in the index, and the book has been swollen in size by some forty pages. Recent chemical researches have been carefully summarized, and the additions to the British, German, and Guy's Hospital pharmacopœias are presented in abstract. Recent therapeutic facts are carefully epitomized, and the work will be very serviceable to physicians and pharmacists.

The Wife and Mother: a Medical Guide to the Care of her Health and the Management of her Children. By Albert Westland, M. A., M. D., C. M. Philadelphia: P. Blakiston, Son, & Company, 1892. Pp. xiv to 282. [Price, $2.]

A large amount of very useful material has been introduced into this volume, and, while exception might be taken to the author's efforts to enlighten his readers on such matters as the diagnosis of the exanthemata and on throat troubles, yet on the whole the work will undoubtedly prove to be very useful to many young married women and mothers.

BOOKS, ETC., RECEIVED.

Multiple Sarcoma. History of a Case showing Modification and Amelioration of Symptoms under Large Doses of Arsenic. By Samuel Sherwell, M. D., Brooklyn. [Reprinted from the *American Journal of the Medical Sciences.*]

A Manual of Bacteriology. By George M. Sternberg, M. D., Deputy Surgeon General, United States Army, Director of the Hoagland Laboratory, Brooklyn, N. Y., etc. Illustrated by Heliotype and Chromo-lithographic Plates and Two Hundred and Sixty-eight Engravings. New York: William Wood & Co., 1892. Pp. xii to 886.

Hygiene and Public Health. By Louis C. Parkes, M. D., D. P. H., Lond. Univ., Fellow of the Sanitary Institute, etc. Third Edition, with Illustrations. Philadelphia: P. Blakiston, Son, & Co., 1892. Pp. xx to 523. [Price, $2.75.]

Materia Medica, Pharmacy, Pharmacology, and Therapeutics. By W. Hale White, M. D., F. R. C. P., Physician to and Lecturer on Materia Medica and Therapeutics at Guy's Hospital, London. Edited by Reynold W. Wilcox, M. A., M. D., LL. D., Professor of Clinical Medicine at the New York Post-graduate Medical School and Hospital, etc. Philadelphia: P. Blakiston, Son, & Co., 1892. Pp. 8-9 to 607. [Price, $3.]

The Chemical Basis of the Animal Body. An Appendix to Foster's Text-book of Physiology (Sixth Edition). By A. Sheridan Lea., D. Sc., F. R. S., University Lecturer in Physiology in the University of Cambridge, etc. New York and London: Macmillan & Co., 1893. Pp. 288. [Price, $1.75.]

Physiology. A Manual for Students and Practitioners. By Frederick A. Manning, M. D., Attending Surgeon, Manhattan Hospital, New York. Series edited by Bern B. Gallaudet, M. D., Demonstrator of Anatomy, College of Physicians and Surgeons, New York. Philadelphia: Lea Brothers & Co., 1892. Pp. 17 to 213. [The *Students' Quiz Series.*]

Hystero-Epilepsy, with Report of Cases. By A. Vander Veer, M. D., Albany, N. Y. [Reprinted from the *Transactions of the Medical Society of the State of New York.*]

Some Considerations in Reference to Uterine Hæmorrhage, Puerperal and Non-puerperal. By A. Vander Veer, M. D., Albany, N. Y. [Reprinted from the *American Gynæcological Journal.*]

Address, delivered before the San Francisco County Medical Society on retiring from the Presidency, November 8, 1892. By D. W. Montgomery, M. D. [Reprinted from the *Pacific Medical Journal.*]

Mechanical Support in Fracture and Dislocation of the Sixth Cervical Vertebra. By H. Augustus Wilson, M. D. [Reprinted from the *Medical Age.*]

The Prevention of Intemperance. By Stephen Smith Burt, M. D. [Reprinted from the *Post-graduate.*]

Cholera in Egypt. By F. M. Sandwith, M. D., Physician to Kasr el Aini Hospital, Cairo.

Report of a Case of Sudden Death from Coronary Obstruction, with Specimen. By Dr. Cassius D. Westcott, Chicago.

Tubercular Osteitis of Tarsus—Rheumatoidal Arthritis of Tarsus. By H. Augustus Wilson, M. D. [Reprinted from the *American Lancet.*]

At what Age should the First Treatment of Congenital Clubfoot be instituted? By H. Augustus Wilson, M. D. [Reprinted from the *Medical News.*]

Pleasure, Pain, and Sensation. By Henry Rutgers Marshall, M. D.

New York Letters on Orthopædic Surgery. The Scope of Orthopædic Surgery. Tubercular Abscesses and their Treatment. By Stewart Leroy McCurdy, M. D., Dennison, Ohio. [Reprinted from the *Columbus Medical Journal.*]

A Rare Form of Kidney Tumor. By James Bell, M. D., and W. G. Johnston, M. D., Montreal. [Reprinted from the *Montreal Medical Journal.*]

Notes on the Bacteriological Study of Diphtheria. By Wyatt Johnston, M. D., Montreal. [Reprinted from the *Montreal Medical Journal.*]

New Inventions, etc.

A NEW COMBINATION STERILIZER FOR ASEPTICIZING SIMULTANEOUSLY WATER, INSTRUMENTS, AND DRESSINGS.

By Frank J. Thornbury, M. D.,

DEMONSTRATOR OF BACTERIOLOGY, MEDICAL AND DENTAL DEPARTMENTS, UNIVERSITY OF BUFFALO.

This apparatus is designed to meet the requirements of the general practitioner as well as the specialist in surgery, obstetrics, and gynæcology.

It consists of a boiler (*B*) in which the water is sterilized, a tray (*C*) containing soda solution in which the instruments are sterilized, and an upper chamber (*E*) for sterilizing the dressings.

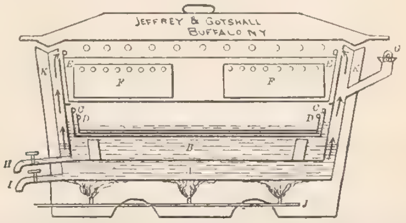
The steam for the latter is generated in a jacket of water (*A*), which envelops the lower boiler and upper instrument tray. The dressing chamber is provided with double walls separated by a space a few centimetres in width, and corresponding to the outer water compartment below. Through the upper intervening space steam ascends from the water jacket to enter, through a line of perforations, the inner chamber *at the top.* Hot air passes up around the dressings through the outermost space (*K*), so they are warmed before the steam encounters them. The water jacket extends from the bottom of the water boiler on all sides upward to the top of the instrument tray. It has drain (*I*) and inlet pipe (*G*) attached. The inner walls of the water jacket form the walls of the boiler for sterilized water on four sides and below. Resting into the boiler above is the shallow instrument tray with soda solution. The cover of the tray is formed by the bottom of the removable chamber for dressings above.

In the latter are contained two sub-compartments (*FF*)—small closed boxes—with two rows of perforations in the top and bottom, left open for entrance of steam while the dressings are sterilizing, afterward closable to preserve them uncontaminated. The communication between the top of the jacket and the outer steam compartment of the upper chamber is direct; in fact, what is the water jacket below corresponds with the outer steam space above. The steam, after permeating and traversing the dressings, gauze, cotton bandages, etc., contained in the boxes in the upper chamber, escapes through a vapor pipe at the side into the open air, or may, in case of an apparatus of large proportions, be conducted through a coil of lead pipe to be condensed in a vessel of cold water.

Supply and drain pipes are provided to the water boiler so that it may be filled, or sterilized water drawn off, as desired.

The whole apparatus is closed at the top by a tightly fitting cover which sets into a water seal around the periphery.

A thermometer for registering the temperature in the steam chamber projects through the cover in the center. The temperature will be found to be uniformly 100° C. in the steam chamber and 104° C. or more in the boiling water and soda. The apparatus is heated by means of a gas pipe (*J*) running underneath and containing a number of jets so that the heat may be distributed over as great an extent of surface as possible. Owing to the compactness of the apparatus, its comparatively small size, and the provision for rapid heating, the entire sterilizing process occupies but a short time.



A, water jacket; *B*, water boiler; *C*, soda tray; *D*, instrument tray; *E*, upper steam chamber; *F*, boxes for dressings; *G*, supply pipe to boiler; *H*, tap to sterilized water boiler; *I*, faucet to water jacket; *J*, gas supply pipe; *K*, hot-air chamber.

The water and soda are boiled in three to five minutes—the instruments sterilizing in the soda—the upper chamber is filled with steam in twelve minutes, and in twenty-eight minutes the dressings are sterilized.

Two boxes of dressings may be sterilized at one time, and in the intervals a quantity sufficiently large to last for a number of operations, so that, in case of emergency and want of time, only a delay of about ten minutes is occasioned. This short time for sterilizing the instruments and water may be made to occupy the interval of details preliminary to the operation.

The dressings, after having been asepticized, are removed in the small boxes (no secondary handling and contamination being permitted) and allowed to dry out, although there has not been much saturation through condensation, owing to the dressings having been warm before the steam encounters them. They set directly over and rest upon a tray of hot soda solution. Secondly, the steam is generated rapidly, is *saturated* and under considerable tension, and consequently has not much tendency to condense on the articles.

To cause evaporation of any moisture that may have occurred, however, and dry thoroughly the dressings so they may be preserved for future use, hot air may be passed through them in a manner to be hereafter described. The dressings, having been sterilized and dried, keep aseptic indefinitely in the tightly closed boxes. One of the latter may be taken by the surgeon to cases in private practice, sterile gauze being thus constantly at hand. In using this combination sterilizer,* first the boiler is filled with water; second, a one-per-cent. soda solution is placed in the tray, and in the latter the instruments are submerged in a shallow wire basket (*D*). Next the boxes are filled with dressings (leaving the cover and bottom orifices open) and set into the sterilizing chamber. Water is now allowed to flow from the hydrant to fill the jacket, and then the gas is turned on. After the sterilizing process is completed the water is drawn from the jacket through a faucet at the side, and water from the hydrant is allowed to course through around the sterilized water in the boiler, cooling it for immediate use. The instruments have been sterilized in the soda which has boiled, and are now taken out and set into a tray containing a cold solution of carbolic acid and soda, one per cent. each. The gas flame allowed to continue generates dry heat (the jacket being empty), which takes the same course to dry the dressings as the steam did in sterilizing them. This constitutes the apparatus and its working complete.

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* Obtainable from Jeffrey & Gotshall, Buffalo, N. Y. See article elsewhere in this journal, The Demands for Sterilization.

I desire to express my thanks to Mr. Charles Jeffrey, of Jeffrey & Gotshall, and also to Mr. D. McAvoy, draughtsman, for valuable aid and suggestions in perfecting my design. I am indebted to Mr. Jeffrey for its execution.

610 Main Street, Buffalo, N. Y.

Miscellany.

A Missionary School of Medicine.—Dr. J. Edward Giles, corresponding secretary of the International Medical Missionary Society, sends us the following:

At a meeting of the Board of Regents of the University of the State of New York, which was held at Albany on the 14th inst., the International Medical Missionary Society, an organization which has been in existence for about twelve years for the purpose of assisting in various ways those who propose to become medical missionaries, received the legal authority to establish a missionary school of medicine in New York city.

A few years ago the same society made application to the State Legislature for a similar charter, but after the bill had passed one branch of the Legislature the society deemed it best to withdraw the application because objection was made by many medical men on the ground that under the laws as they then existed there was danger that such a school would become merely a "diploma-factory" and "flood the country with cheap doctors." The conditions under which the present charter has been granted will obviate any such danger, even if the society itself should fall into untrustworthy hands. The conditions are these:

1. No students are to be received except those pledged to do missionary work.

2. The standard required for admission is higher than for any other medical school in this State. The candidate must present either a certificate of admission to a college approved by the Board of Regents, or a certificate of graduation from an approved high school, or he may be admitted without these certificates by passing examinations under the Board of Regents and securing fifty counts. The requirement for other medical schools is only sixteen counts.

3. The prescribed course of study is to cover four years of *nine months each.*

4. The graduates of this school must pass the same examinations under the State board as the graduates of the other regular schools in order to receive certificates of graduation.

It may be objected that it would be better to provide scholarships in the schools already established than to found a new school, but those interested in this school believe that the new school will offer several advantages over the larger schools for those whose purpose is to become medical missionaries. Some of these advantages are:

a. The classes will be smaller, and therefore the instruction can be made more personal.

b. The fees and living expenses can be made very moderate, because quite liberal contributions are being received, which will make up deficiencies in income.

c. Arrangements will be made so that the students shall receive instruction in nursing, pharmacy, and some other branches which are not provided for in the usual medical course.

d. The society has already established several dispensaries in the slums of New York, which will now be put upon a better basis than has heretofore been possible, and these dispensaries will be utilized not only as a means of instructing students in the work of dispensing drugs, but also as training places in practical mission work.

The objections urged against some of the dispensaries of this city will not hold against these, because from their locations they do not reach a class of people who could be expected to pay for medical attendance, but most of those who are cared for at these dispensaries are, in fact, too poor to be "pauperized."

As an evidence that those who have looked into the matter are convinced of the necessity for a special school for the purpose explained above it may be stated that the meeting of the board at which the subject was considered was the largest meeting ever held; and yet in this full meeting the vote in favor of granting the charter was unanimous.

To Contributors and Correspondents.—*The attention of all who purpose favoring us with communications is respectfully called to the following:*

Authors of articles intended for publication under the head of "original contributions" are respectfully informed that, in accepting such articles, we always do so with the understanding that the following conditions are to be observed: (1) when a manuscript is sent to this journal, a similar manuscript or any abstract thereof must not be or have been sent to any other periodical, unless we are specially notified of the fact at the time the article is sent to us; (2) accepted articles are subject to the customary rules of editorial revision, and will be published as promptly as our other engagements will admit of—we can not engage to publish an article in any specified issue; (3) any conditions which an author wishes complied with must be distinctly stated in a communication accompanying the manuscript, and no new conditions can be considered after the manuscript has been put into the type-setters' hands. We are often constrained to decline articles which, although they may be creditable to their authors, are not suitable for publication in this journal, either because they are too long, or are loaded with tabular matter or prolix histories of cases, or deal with subjects of little interest to the medical profession at large. We can not enter into any correspondence concerning our reasons for declining an article.

All letters, whether intended for publication or not, must contain the writer's name and address, not necessarily for publication. No attention will be paid to anonymous communications. Hereafter, correspondents asking for information that we are capable of giving, and that can properly be given in this journal, will be answered by number, a private communication being previously sent to each correspondent informing him under what number the answer to his note is to be looked for. All communications not intended for publication under the author's name are treated as strictly confidential. We can not give advice to laymen as to particular cases or recommend individual practitioners.

Secretaries of medical societies will confer a favor by keeping us informed of the dates of their societies' regular meetings. Brief notifications of matters that are expected to come up at particular meetings will be inserted when they are received in time.

Newspapers and other publications containing matter which the person sending them desires to bring to our notice should be marked. Members of the profession who send us information of matters of interest to our readers will be considered as doing them and us a favor, and, if the space at our command admits of it, we shall take pleasure in inserting the substance of such communications.

All communications intended for the editor should be addressed to him in care of the publishers.

All communications relating to the business of the journal should be addressed to the publishers.

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